



## Dave Pearman

**Having a Web site just isn't good enough anymore – it's more vital for companies to match their HTML words with real-world deeds**

Last month's G8 Summit – the meeting of the leaders of the world's eight wealthiest nations – unsurprisingly produced little in the way of use for the future of the planet. Vague mutterings about 'reducing third world debt' were heard again, but there was at least something new. Discussing the so-called 'Digital Divide', and led by the Japanese, the group thought it would be quite a nice idea if the developed nations could help those 'less fortunate than themselves' by providing access to the technology needed to get on to the Internet.

Now this suggestion does have a certain superficial logic to it, and in fact I rather pompously suggested in my first column here some months ago that we, the wealthy, should put something back into those parts of the world whose cheap labour have made the personal computing revolution possible. Trouble is, the very idea of getting every person, family or even community on-line is so fundamentally flawed as to make it laughable.

For a start, many have rather cynically suggested that the impetus behind this plan is to promote e-commerce, and open up a global market of billions of new consumers, eager to buy Western goods they can't find (or afford) locally. But even hardened UK e-consumers, used to buying and selling this way for years, are starting to question the wisdom of doing so. Think that's overstating the problem? Just look back at some of the Internet scares of the last few weeks alone...

Do you pay your utility bills on-line? Are you a PowerGen customer? Are you one of the unfortunate 5,000 whose credit card details were left carelessly

laying around for anyone to find? A quick browse around the supposedly secure Web site was enough to reveal shocking information which, in the hands of the less-than-scrupulously-honest, could be worth a fortune. Labour MP Derek Wyatt is expected to ask questions in the House on this very issue – how did it happen, what can we do to prevent it happening again, and why isn't there a government minister responsible for e-commerce?

Or, even closer to home, and therefore more embarrassing for the government, what about the revelations that Self-Assessment tax returns (eventually)

**"People and companies using the Internet can be misguided, careless, short-sighted, hasty, unlucky, incompetent, criminal or just plain stupid"**

made over the Internet to the Inland Revenue were printed out, and re-typed? Does that fill you with confidence that your return will be handled correctly? Always assuming that it isn't one of the five million that have been 'lost', that is. I think I'll be trusting mine to the time-honoured service of the Royal Mail, thanks. Of course, the on-line service – late, and with obvious problems, is being promoted at great expense on television. In some cases, on the same television channels that report the number of staff in the Ministry of Agriculture dwindling, as farmers are encouraged to use the Internet to make contact.

Next, consider the reliability of Internet services. As I write this, BT's main sites were recovering from an external attack which brought them all down, allegedly perpetrated by a disgruntled customer, fed up with constantly losing his Internet connection. A stiff letter to the Managing Director to complain about poor service isn't good enough these days, it seems.

And finally, following on from my recent rant in these pages about the vulnerability of computer software to virus

infection – and Microsoft products are usually the targets – there's word of another new strain that's even deadlier than the last, and bound to bring disruption and mayhem to Outlook users worldwide. Again. The simple act of delivering messages with cunningly malformed headers is enough to give the unscrupulous access to your computer, it seems. As usual, there's a fix available from Microsoft, which helpfully suggests downloading Internet Explorer 5.5, the latest version of the software suite that has seemed so vulnerable to such attacks.

All of these problems occur not because the Internet itself is fundamentally flawed, but because the people and companies using it can be misguided, careless, short-sighted, hasty, unlucky, incompetent, criminal or just plain stupid. Such traits existed in humans long before the Internet, it's true, but it's only now that the consequences of seemingly trivial actions can be so far-reaching. For example, it's hard to imagine a company printing out the names and credit card details of thousands of their customers, and posting them out with the red reminders. Perhaps the appeal of the Internet to business – that it's immediate, trendy, and needs fewer staff than traditional methods of doing business – are blinding some to the dangers.

Ironically speaking, the poorest people of the third world can hardly have an inkling of what horrors await them. Perhaps getting them all on-line isn't the thing to do just yet. After all, if only one person in 300 in Ethiopia has a telephone, there's obviously a long way to go. Which may just give the industry time to get its house in order... **PCP**

### Write in!

Tell us your Web horror stories! Were you one of the 5,000 whose details were posted by PowerGen? And what can the ordinary customer do in the face of such incompetence? Write to [PCPlus.mailbox.co.uk](mailto:PCPlus.mailbox.co.uk) or to Dave at [dave.pearman@futurenet.co.uk](mailto:dave.pearman@futurenet.co.uk)

# 50 BEST UPGRADES



It's the summer, you've blown your money on a holiday, but you'd be surprised – there's no better time to grab a bargain. **Tony Browne** scours the shops for the top 50 most affordable upgrades and lists their street prices, saving you time and money. Let's see what's worth looking at...



# UNDER £150

**S**ome may argue that upgrading is a waste of time and money, especially as PC prices are falling all the time. Look around and you can get PCs that cost £400 but beware, these could well have components that match your computer's current configuration. Some also claim that many computer upgrade items are expensive and hard to fit, especially if you're a computing novice.

Not any more; this feature proves that you can get nearly any part for your PC for £150 or less. And, thanks to the fact that peripheral makers are all supplying better instructions these days, you don't have to be a technical expert to install a faster processor, or even a bigger hard drive.

One of the best places to go shopping for a new peripheral is online. You can check for the lowest prices, you can easily make comparisons and, if you are still concerned about online ordering, you can phone up instead.

Yet shopping on the Web is now more secure than ever before and so you shouldn't have to worry about hackers getting your credit card details. And there are also other advantages over traditional shopping methods – many items can be found cheaper than if bought from traditional 'bricks and mortar' shops plus some sites will even deliver your purchase for free if your order via the Web as opposed to on the phone.

This feature aims to show you just what you can get for under £150. We used a mix of the latest **PC Plus** reviews



[www.pcindex.co.uk](http://www.pcindex.co.uk)

and our partner site, PC Index to search for products with sub-£150 street prices listed on the Web. We were able to discover significant savings across a range of products. And although not every product here is available from sites price checked by PC Index, most are. PC Index automatically checks 15 top retail Web sites every day for the latest street prices and availability on a range of common PC peripherals. Where possible, we have listed those best street prices.

## Comparing prices

If you're thinking about upgrading one or more parts on your PC, have a look at what we found. Do remember these prices are falling all the time, though, so it's possible some of these items may have been even discounted further by the time you read this.

One other thing to bear in mind is additional charging. The suppliers featured here were quoting the lowest basic figure for the item in question on the day we checked. There may be extra charges on top of this basic figure, usually post and packaging. We recommend you check the table at the end of this feature for typical additional charges, or visit PC Index yourself to compare prices. Even if you're not planning to upgrade, you may discover a bargain...

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↑ Intel's value for money processor gets our vote with fast clock speeds at low prices.

## Processor upgrades

### 1. Celeron 600MHz 370

**BEST PRICE** £132 **EX VAT** £112  
**AVAILABLE FROM** [www.dabs.com](http://www.dabs.com)  
**PHONE** 0800 129 5167  
**MADE BY** Intel, [www.intel.com](http://www.intel.com)

One of the easiest ways to speed up your computer is to fit a faster processor. Our pick of the bunch is the Intel Celeron Socket 370 running at 600MHz. Forget all the old horror stories about less than exceptional performance, the latest version of the Celeron is cheap and it's great for over-clocking.

If you have a fast BX-type motherboard and an old Pentium II processor you can buy one of these chips, and a cheap and readily available Slotlet converter which turns your old Slot 1-type motherboard into a newer Socket 370-compatible device.

#### ✓ FOR

Fast and cheap

#### ✗ AGAINST

You may need a Slotlet adaptor

**PCPlus Verdict 9/10**



↑ AMD's processor will be able to cope with anything you throw at it.

### 2. Athlon 700MHz

**BEST PRICE** £141 **EX VAT** £120  
**AVAILABLE FROM** [www.dabs.com](http://www.dabs.com)  
**PHONE** 0800 129 5167  
**MADE BY** AMD, [www.amd.com](http://www.amd.com)

AMD Athlons are usually cheaper and faster than similarly clock-rated Pentium III chips, offering you, the end user, more bang for your buck. Although Athlons have recently reached the dizzy speed of 1GHz, you can still get a 700MHz for under £150 and this is a great deal of processing power for not a lot of money. The only down side to this is that you'll need a Slot A-type motherboard, not a problem if you have a slower Athlon in your PC already, but it will mean a new board for all you Intel owners out there who are looking to change sides.

#### ✓ FOR

Great Pentium III-beating performance

#### ✗ AGAINST

Needs a Slot A-type motherboard

**PCPlus Verdict 9/10**

## Scanner upgrades



↑ It's cool, black and has great scanning capabilities. It's the Visioneer Onetouch 8100, winner of our recent scanner roundup.

### 3. Onetouch 8100

**BEST PRICE** £120 **EX VAT** £102  
**AVAILABLE FROM** [www.visioneer.com](http://www.visioneer.com)  
**PHONE** 0207 341 5522  
**MADE BY** Visioneer

Our recent roundup of the best budget scanners found that the Visioneer Onetouch 8100 was the best of the lot. Like many of the scanners on the market today, the Onetouch 8100 has shortcut buttons to make scanning tasks like e-mailing scans to other people easy. Furthermore, this landscape scanner also features parallel and USB connection, fast scanning speeds and a maximum optical resolution of 600 x 1,200.

Included in the package are PaperPort, which can directly scan images into any application on your hard drive that supports this feature and MGI's PhotoSuite, a full image-editing program.

#### ✓ FOR

Speed of scan

#### ✗ AGAINST

Not great on skin tones

**PCPlus Verdict 10/10**

### 4. SnapScan Touch

**BEST PRICE** £86 **EX VAT** £73  
**AVAILABLE FROM** [www.gb.buy.com](http://www.gb.buy.com)  
**PHONE** 0800 376 5959  
**MADE BY** Agfa, [www.agfa.co.uk](http://www.agfa.co.uk)

If you find the Visioneer's black colour scheme a little sombre, you could always try the Agfa SnapScan Touch. This off-white USB scanner comes with seven coloured handles so you can change its look to suit your mood.

Agfa hasn't put form over function, though, because this landscape flatbed model still manages to squeeze in features such as USB compatibility and a 600 x 1,200 maximum optical resolution. Software-wise, this scanner comes with

Corel's PrintHouse, PageKeeper OCR and Agfa ScanWise TWAIN software.

This scanner is fast at low resolution and yet it still has a low price, making it a winner.

**✓ FOR**

Comes with colourful handles

**✗ AGAINST**

Scanning can be slow at high resolution

**PCPlus Verdict 9/10**

## DVD drive upgrades



↑ With the DRD 8080B DVD drive you can now sit down in front of your PC with a beer and watch a film or two.

### 5. DRD 8080B

**BEST PRICE** £116 **EX VAT** £99

**AVAILABLE FROM** LG Electronics

**PHONE** 01753 500 400

**MADE BY** LGE, [www.lge.co.kr/english](http://www.lge.co.kr/english)

The world has gone DVD mad lately and it's for a good reason: DVD discs can hold an awful lot of information. A double-sided double-layered item can hold about 4.7GB worth of storage and this is enough to store a film.

Although there isn't a big variety at the sub-£150 price point yet, the DRD 8080B is a high-quality drive that features 6x DVD, and 40x CD reading speeds plus a great manual. Furthermore, you also get a PowerDVD MPEG software player so you can start watching DVD videos straight away if you have a fast enough processor (500MHz or above). You know where to look if you don't!

**✓ FOR**

Nice extras

**✗ AGAINST**

None that we know

**PCPlus Verdict 9/10**

## → Memory upgrades

### 128MB DIMM module

**BEST PRICE** £140 **EX VAT** £120

**AVAILABLE FROM** Crucial

**PHONE** 0800 013 0330

There's a boring but nevertheless true rule: You can never have enough memory.

Games, graphics programs, Windows and even bog standard programs work faster with more system RAM. If you're struggling with 32MB or less, you'll definitely notice the difference if you stick a 64MB memory module inside your PC.

We suggest you fit a 128MB DIMM module. To do this, you'll have to find out which memory type is suitable for your computer, which you can do by looking at your computer's motherboard manual, asking the PC's manufacturer or by using sites that have memory databases such as [www.crucial.com/uk](http://www.crucial.com/uk)

**✓ FOR**

Speeds up your computer

**✗ AGAINST**

Can be expensive

**PCPlus Verdict 8/10**

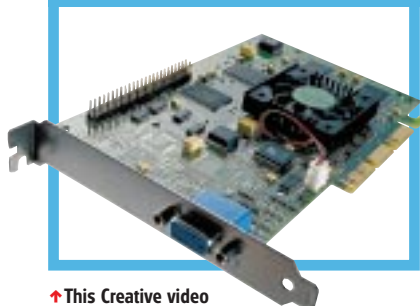


↑ A healthy amount of RAM will help speed up your computer and, in most cases, it's easy to fit.





## Graphics cards upgrades



↑ This Creative video card may use old GeForce technology but it is probably much faster than the old video card you currently have in your PC.

### 7. 3D Annihilator Pro

**BEST PRICE** £116 **EX VAT** £99

**AVAILABLE FROM** [www.scan.co.uk](http://www.scan.co.uk)

**PHONE** 01204 474 747

**MADE BY** Creative, [www.creative.com](http://www.creative.com)

Still using that old 3D accelerator and 2D card combo? You need to throw them away and get into AGP cards that provide lightning fast 3D images, while still being able to produce excellent 2D images.

A card that is definitely worth looking out for is Creative's 3D Annihilator Pro. This uses nVidia's revolutionary GeForce chipset, the first to contain a Graphics Processing Unit (GPU). This GPU takes a lot of the strain of the computer's CPU, enabling you to get higher frame rates. We use these cards in our reference machines and they're getting cheaper all the time, thanks to the introduction of a newer model, the GeForce 2.

✓ **FOR**

It's fast

✗ **AGAINST**

It has been surpassed by the GeForce 2

**PCPlus Verdict 9/10**

### 8. G400 Dual Head

**BEST PRICE** £150 **EX VAT** £128

**AVAILABLE FROM** [www.watford.co.uk](http://www.watford.co.uk)

**PHONE** 0870 7295600

**MADE BY** Matrox, [www.matrox.com](http://www.matrox.com)

What is it about Canada and graphics? This place seems to be the home to many visual imaging companies including ATI, Softimage and Matrox. For years, Matrox has been producing some fast and technologically advanced cards such as the G200 series. The G400 takes this baton and runs with it with the introduction of the Dual Head system which enables you to view two monitors if you have Win98. This feature comes into its own when you do work such as Web graphics or when playing games. As

the next generation of this card is about to arrive, bargains are just waiting to be found.

✓ **FOR**

Brilliant image quality

✗ **AGAINST**

Not the fastest

**PCPlus Verdict 9/10**

## Printer upgrades



↑ It's fast, colourful and it produces great quality colour printing. The Epson Color Stylus is one of the best ink-jets around.

### 9. Color Stylus 760

**BEST PRICE** £130 **EX VAT** £110

**AVAILABLE FROM** [www.gb.buy.com](http://www.gb.buy.com)

**PHONE** 0800 376 5959

**MADE BY** Epson, [www.epson.co.uk](http://www.epson.co.uk)

Want a colourful new ink-jet printer that's fast and cheap to run? Then consider the Epson Color Stylus 760.

It may take a little bit of room on your desktop but you'll forgive this when you

see the quality of the print. It is also available in a range of bright iMac influenced colours. Not only is this printer fast, it produces sharp output in text, vector graphics and even photo-image printing modes. Add good paper handling facilities and the fact that this printer doesn't cost the earth to buy or run and you'll see why we like it.

✓ **FOR**

Comes in a range of funky colours

✗ **AGAINST**

Slightly large footprint

**PCPlus Verdict 9/10**

### 11. Deskjet 840c

**BEST PRICE** £91 **EX VAT** £77

**AVAILABLE FROM** [www.jungle.com](http://www.jungle.com)

**PHONE** 0870 727 1771

**MADE BY** Hewlett-Packard, [www.hp.com/uk](http://www.hp.com/uk)

Hewlett-Packard are known for producing items that have exceptional build quality and this printer, the colour ink-jet Deskjet 840c, is no different.

One handy feature is that it has drying flaps that catch your printed output. Another handy feature is a USB port. USB ports are quickly replacing slower parallel connectors but it is unusual to see one on an inexpensive item such as the Deskjet 840c.

On the down side, the printer can be slow when producing output and the printing quality can be slightly below par. Fortunately, low running costs negate these flaws.

✓ **FOR**

Decent quality printing

✗ **AGAINST**

Slow printing performance

**PCPlus Verdict 7/10**



## → Monitor upgrades

### 10. 10 30 20

**BEST PRICE** £142 **EX VAT** £121

**AVAILABLE FROM** [www.simply.co.uk](http://www.simply.co.uk)

**PHONE** 0870 727 2190

**MADE BY** Belinea, [www.maxdata.co.uk](http://www.maxdata.co.uk)

These days a 17-inch is a popular size for a monitor and, if you're moving up from a tiny 14-inch display unit, you'll notice the differences in screen real estate.

A good budget model that you should take notice of is the Belinea 10. 30 20. This gives it a maximum resolution of 1,280 x 1,024, although 1,024 x 768 is usually more comfortable to view on a 17-inch monitor.

✓ **FOR**

A 17-inch model for peanuts

✗ **AGAINST**

Aged user interface

**PCPlus Verdict 7/10**



↑ Maxdata and its Belinea range of monitors may not be a brand that you're familiar with but it produces some great budget monitors at low prices.



## → Digital camera upgrades

### 12. Webcam Go Plus

**BEST PRICE** £116 **EX VAT** £99  
**AVAILABLE FROM** [www.dabs.com](http://www.dabs.com)  
**PHONE** 0870 129 3120  
**MADE BY** Creative, [www.creative.com](http://www.creative.com)

When is a Webcam not a Webcam? The answer is when it's Creative's Webcam Go Plus.

This device can act just like a normal digicam – you can place it on top of your computer or monitor and the whole world can watch your environment online.

But, what this camera can also do is take pictures away from your desktop because it simply unplugs from its USB cable, enabling you to take 640 x 480 snaps or short time delay film clips. Now with 8MB RAM, this camera is a steal.

✓ **FOR**  
 Take pictures anywhere  
 ✗ **AGAINST**  
 Low resolution

**PCPlus Verdict 8/10**

→ Yes you can get a digital camera for under £150. Why not check out the Creative Webcam Go Plus for proof.

### 14. Diamond Plus 6800

**BEST PRICE** £85 **EX VAT** £100  
**AVAILABLE FROM** [www.dabs.com](http://www.dabs.com)  
**PHONE** 0870 129 3120  
**MADE BY** Maxtor, [www.maxtor.com](http://www.maxtor.com)

Maxtor's 13GB Diamond Plus 6800 has a 2MB buffer, UDMA 66 support and a spindle speed of 7200 RPM. The drive also employs Maxtor's latest technology, DualWave, and this multi-processor controller is claimed to provide a ten-fold improvement in response times. Furthermore, the Diamond Plus 6800 sports 100MHz SDRAM to speed up access performance when using the drive. All these factors add up to a fast, accomplished drive.

✓ **FOR**  
 7200 RPM spindle speed  
 ✗ **AGAINST**  
 Seek times not as fast as claimed

**PCPlus Verdict 8/10**

## Soundcard upgrades



↑ The best has got better: Creative's SoundBlaster now comes with a Live! II drive.

## Hard drive upgrades



↑ With applications gobbling increasing space, you probably need a bigger hard drive...

### 13. Deskstar34GXP

**BEST PRICE** £127 **EX VAT** £108  
**AVAILABLE FROM** [www.dabs.com](http://www.dabs.com)  
**PHONE** 0870 129 3120  
**MADE BY** IBM, [www.ibm.com](http://www.ibm.com)

Is that old 4.3GB hard drive full up again? You should upgrade to a newer 13GB model – now cheaper than ever. There's an old IT saying that you'll never get fired for buying IBM. We can't promise you that, but what we can say is that the computer giant does produce some great storage devices such as its famed Microdrive for mobile computers. Of course, it also designs some pretty good hard drives. IBM's Deskstar 34GXP UMA66 hard drive with 13.6GB of storage capacity is a good all-rounder. It has a spindle speed of 7200 RPM and it uses Giant Magneto Resistive (GMR) technology to squeeze more capacity on to each platter within the drive.

✓ **FOR**  
 High storage capacity  
 ✗ **AGAINST**  
 Nothing to quibble about at this price

**PCPlus Verdict 8/10**

### 15. SoundBlaster Live Platinum

**BEST PRICE** £139 **EX VAT** £119  
**AVAILABLE FROM** [www.microsdirect.co.uk](http://www.microsdirect.co.uk)  
**PHONE** 0161 248 4848  
**MADE BY** Creative, [www.creative.com](http://www.creative.com)

Regular readers will know that we did a soundcard roundup last month and most of these items can be had for under £150. If you upgrade now, you'll get crystal clear next-generation audio. The top of the pops in the soundcard market is the Creative SoundBlaster Live! Platinum. This card has loads of powerful audio effects built-in and it comes with a Live! II Drive that enables you to plug in external musical instruments. What's more, Creative has bundled loads of brilliant software.

Not only do you get two games (Alien vs Predator and the racing game, Rollcage) you'll also find copies of Cubasis VST and Mixman



studio. These programs enable you to mix and create your own tunes if you think that you're a bit of a musical maestro.

Although this soundcard is one of the best in the world, you can pick it up for a song.

✓ **FOR**

One of the best cards available today

✗ **AGAINST**

No A3D support

**PCPlus Verdict 9/10**

## 16. SoundBlaster Value Player 1024

**BEST PRICE** £56 **EX VAT** £47

**AVAILABLE FROM** [www.gb.buy.com](http://www.gb.buy.com)

**PHONE:** 0800 376 5959

**MADE BY** Creative, [www.creative.com](http://www.creative.com)

If you want a decent soundcard for not a lot of money then you should go for Creative's SoundBlaster Value Player 1024. This card has most of the features that you'll associate with the SoundBlaster Platinum, but it does without the Live! II drive, making it a lot cheaper.

Thanks to Creative's EAX technology this card is great for gamers and musicians alike – especially if you want to use all the available 1,024 voices. There's a free game, DVD and MP3 software all thrown in for free. What more could you want from a budget soundcard?

✓ **FOR**

Brilliant EAX system

✗ **AGAINST**

Not A3D-compatible

**PCPlus Verdict 8/10**

## CD writer upgrades



↑ This CD writer will help you back up your work and transfer large files quickly.

## 17. CED 8080B CD-Writer

**BEST PRICE** £143 **EX VAT** £122

**AVAILABLE FROM** [www.scan.co.uk](http://www.scan.co.uk)

**PHONE** 01204 474 747

**MADE BY** LGE, [www.lge.co.kr](http://www.lge.co.kr)

LGE is one of the world's largest makers of CD drives and the CED 8080B CD-Writer includes technical highlights such as 32x read, 8x write and 4x rewrite speeds, and a 2MB memory buffer.

Additionally, it supports features such as over-burning (the ability to squeeze more than 650MB on a disc to

get around copy protection) and CD text (a feature that enables LCD displays such as those found on in-car CD players to show the names of tracks).

This drive comes with Nero CD burning software, and you can save yourself a fortune on the RRP of only a few weeks ago if you buy online from Scan.

✓ **FOR**

Many useful features

✗ **AGAINST**

Not much!

**PCPlus Verdict 9/10**

## 18. CD W54EK

**BEST PRICE** £149 **EX VAT** £127

**AVAILABLE FROM**

[www.microwarehouse.co.uk](http://www.microwarehouse.co.uk)

**PHONE** 0208 906 9111

**MADE BY** Teac, [www.teac.co.uk](http://www.teac.co.uk)

If you don't like the look of the LG CED 8080B then why not consider the Teac CD W54EK?

This drive isn't as fast – with speeds of 32x read, 4x write and 4x rewrite – and you get an older version of the popular CD writing utility program, Nero version 4, but it does support popular features such as CD text and over-burning. In addition, its list price of £149 will, no doubt, soon be reduced.

✓ **FOR**

Great value

✗ **AGAINST**

Not the fastest ever

**PCPlus Verdict 8/10**

## → Network upgrades

### 19. Battle Pak

**BEST PRICE:** £59 **EX VAT** £50

**AVAILABLE FROM:** [www.farallon.co.uk](http://www.farallon.co.uk)

**PHONE:** 0800 731 8929

**MADE BY:** Farallon, [www.farallon.co.uk](http://www.farallon.co.uk)

Computers are great but they are more useful if you link them together, helping you share information and resources such as printers. Another reason for hooking up PCs is to play games such as third person perspective shooters such as Doom, Quake and Half-Life across a network.

To link computers together you'll need some sort of networking setup, and the Farallon Battle-Pak suits the bill perfectly.

Included in this package is a five-way hub and all the cabling you need to start a 10 Base network. Just get two compatible network adaptors and you're away.

✓ **FOR**

Brilliant piece of networking kit for the money

✗ **AGAINST**

Needs two network cards

**PCPlus Verdict 8/10**



➔ In the near future, all home PCs will be networked. If you buy this starter kit you'll be half way there.





↑ If you transfer files regular or want to back up important documents, the 250MB USB Zip drive from lomega could be just what you need.

## → Backup upgrades

### 20. Zip 250 USB

**BEST PRICE** £150 **EX VAT** £127

**AVAILABLE FROM** lomega

**MADE BY** lomega,

www.lomega-europe.com

The humble floppy doesn't hold much – 1.44MB is its limit, and a few files will easily fill up this amount of storage capacity. Apple decided to completely remove it from the iMac, and soon PC

makers may follow suit thanks to the fact that you can send small files to others easily via the Internet.

This is where a Zip drive comes in handy. Not only do these drives look cool, they can hold 250MB and they're compatible with any USB-enabled computer. This means better transfer speeds than previous parallel-based devices

✓ **FOR**

Portable and popular form of backup

✗ **AGAINST**

Doesn't hold as much as a CD

**PCPlus Verdict 8/10**

## → The best of the rest

30 items that we think are great value for money. Go to PC Index to check out the latest pricing information...

### ↓ DVD

#### PRODUCT

Pioneer DVD-A104S (IDE, DVD 10x, CD-ROM 40x, 512KB)

#### BEST PRICE

£90 (£76 EX VAT)

#### SUPPLIED BY

M Squared

#### ORDER FROM

www.msquared.co.uk, 0800 917 9695

### ↓ CD WRITERS

#### PRODUCT

HP CD-Writer Plus 8250i (IDE, 24x4w4rw, 2MB, internal)

#### BEST PRICE

£123 (£105 EX VAT)

#### SUPPLIED BY

Insight

#### ORDER FROM

www.insight.com 0870 700 7350

#### PRODUCT

Mitsumi CR4804TE (IDE, 24x4w4rw, 2MB, internal)

#### BEST PRICE

£125 (£107 EX VAT)

#### SUPPLIED BY

Microdirect

#### ORDER FROM

www.microdirect.co.uk 0161 248 4848

#### PRODUCT

Philips, PCRW404 (IDE, 32x4w4rw, 2MB, internal)

#### BEST PRICE

£123 (£105 EX VAT)

#### SUPPLIED BY

Dabs

#### ORDER FROM

www.dabs.com 0800 129 5167

#### PRODUCT

HP CD-Writer Plus 8210i (IDE, 24x4w4rw, 2MB, internal)

#### BEST PRICE

£139 (£119 EX VAT)

#### SUPPLIED BY

Misco

#### ORDER FROM

www.misco.co.uk 01933 400 400

### ↓ GRAPHICS CARDS

#### PRODUCT

Diamond Stealth III S540 Xtreme 32MB AGP

#### BEST PRICE

£64 (£53 EX VAT)

#### SUPPLIED BY

Dabs

#### ORDER FROM

www.dabs.com 0800 129 5167

#### PRODUCT

3D Blaster TNT M64 – 32MB AGP

#### BEST PRICE

£76 (£65 EX VAT)

#### SUPPLIED BY

Insight

#### ORDER FROM

www.insight.com 0870 700 7350

#### PRODUCT

Voodoo3 3000 AGP 16MB

#### BEST PRICE

£90 (£76 EX VAT)

#### SUPPLIED BY

Jungle

#### ORDER FROM

www.jungle.com 0870 727 1771

#### PRODUCT

Viper II – 32MB, AGP 4x, S3 Savage 2000

#### BEST PRICE

£112 (£88 EX VAT)

#### SUPPLIED BY

Insight

#### ORDER FROM

www.insight.com 0870 700 7350

### ↓ HARD DRIVES

#### PRODUCT

IBM Deskstar 25GP 20.3GB (UDMA66, 9ms, 2MB, 195.6 Mbits/s)

#### BEST PRICE

£122 (£103 EX VAT)

#### SUPPLIED BY

Dabs

#### Dabs

#### ORDER FROM

www.dabs.com 0800 129 5167

#### PRODUCT

Western Digital Caviar 205BA 20.5GB (UDMA66, 7200 RPM, 8.9ms, 2NMB 304 Mbits/s)

#### BEST PRICE

£122 (£103 EX VAT)

#### SUPPLIED BY

Watford

#### ORDER FROM

www.watford.co.uk 0870 729 5600

#### PRODUCT

Quantum Fireball Plus LM 15.0GB (UDMA66, 7200 RPM, 8.5ms, 2MB)

#### BEST PRICE

£96 (£82 EX VAT)

#### SUPPLIED BY

Microdirect

#### ORDER FROM

www.microdirect.co.uk 0161 248 4848

### ↓ MEMORY

#### PRODUCT

128MB PC 100

#### BEST PRICE

£101 (£86 EX VAT)

#### SUPPLIED BY

Aria

#### ORDER FROM

www.aria.co.uk 0161 248 4383

### ↓ MONITORS

#### PRODUCT

Hansol 710A 17-inch

#### BEST PRICE

£143 (£122 EX VAT)

#### SUPPLIED BY

Simply

#### ORDER FROM

www.simply.co.uk 0870 727 2190

### ↓ PRINTERS

#### PRODUCT

Canon BJ-C1000 (A4, 720x360dpi, 4ppm mono, 0.6ppm colour)

#### BEST PRICE

#### £50 (£43 EX VAT)

#### SUPPLIED BY

buy.com

#### ORDER FROM

www.gb.buy.com 0800 376 5959

#### PRODUCT

Lexmark LJ-Printer Z11 (A4, 1200dpi, 4ppm mono, 2.5ppm colour)

#### BEST PRICE

£59 (£50 EX VAT)

#### SUPPLIED BY

Insight

#### ORDER FROM

www.insight.com 0870 700 7350

#### PRODUCT

Epson Stylus Color 460 (A4, 720dpi, 4ppm mono, 2.5ppm colour)

#### BEST PRICE

£69 (£59 EX VAT)

#### SUPPLIED BY

buy.com

#### ORDER FROM

www.gb.buy.com 0800 376 5959

#### PRODUCT

HP DeskJet 610C (A4, 600dpi, 4ppm mono, 1ppm colour)

#### BEST PRICE

£67 (£57 EX VAT)

#### SUPPLIED BY

Dabs

#### ORDER FROM

www.dabs.com 0800 129 5167

#### PRODUCT

Canon BJ-C2000 (A4, 720x360dpi, 4.5ppm mono, 2ppm colour)

#### BEST PRICE

£71 (£61 EX VAT)

#### SUPPLIED BY

Simply

#### ORDER FROM

www.simply.co.uk 0870 727 2190

#### PRODUCT

Lexmark JetPrinter Z31 (A4, 1200dpi, 8ppm

## → Delivery and mail charges

The prices that you see in the main part of the feature do not include the cost of sending these items to you. Here is a list of supplier's charges for an average sized soundcard. Please ring to confirm any postage and packaging costs before ordering any item.

#### Buy.com:

Standard 3-5 days, free

Next day delivery £7

Saturday delivery £20

#### Dabs.com:

Free delivery when

ordering online

£10 plus VAT if ordered

over the phone

#### Jungle:

£8.75 if ordered over

the phone

#### Free if ordered on the

Internet (3-5 days)

Express service

(under 3 days) £5

#### Microdirect:

£7.05 next day delivery

Microwarehouse:

£9 for normal delivery or

£15 for next day

#### Scan:

£11.75 for its

smallest item next day

#### delivery service

#### Simply:

£10.50 next

working day,

If under £25 in value

the item will go in

normal post 3-5 days

#### Watford:

Internet sales free

delivery

Phone sales £7.05

within 3-5 working days

#### CCL Computers

#### ORDER FROM

www.cclcomputers.co.uk 0845 345 2510

#### PRODUCT

AMD Duron 700MHz

#### Socket A

#### BEST PRICE

£110 (£128 EX VAT)

#### SUPPLIED BY

Aria

#### ORDER FROM

www.aria.co.uk

0161 248 4383

#### PRODUCT

AMD K6-2 550 MHz

#### BEST PRICE

£58 (£49 EX VAT)

#### SUPPLIED BY

Watford

#### ORDER FROM

www.watford.co.uk

0870 729 5600

### ↓ SCANNERS

#### PRODUCT

Acer Scan 620ST (SCSI, 600x1200dpi (19200dpi), 36-bit)

#### BEST PRICE

£137 (£117 EX VAT)

#### SUPPLIED BY

Dabs

#### ORDER FROM

www.dabs.com

0800 129 5167

#### PRODUCT

Canon CanoScan

FB630U

(USB, 600x1200dpi

[9600dpi],

36-bit)

#### BEST PRICE

£81 (£69 EX VAT)

#### SUPPLIED BY

buy.com

#### ORDER FROM

www.gb.buy.com

0800 376 5959

### ↓ SOUND CARDS

#### PRODUCT

SoundBlaster PCI 64

#### BEST PRICE

# Who needs an Internet fridge?

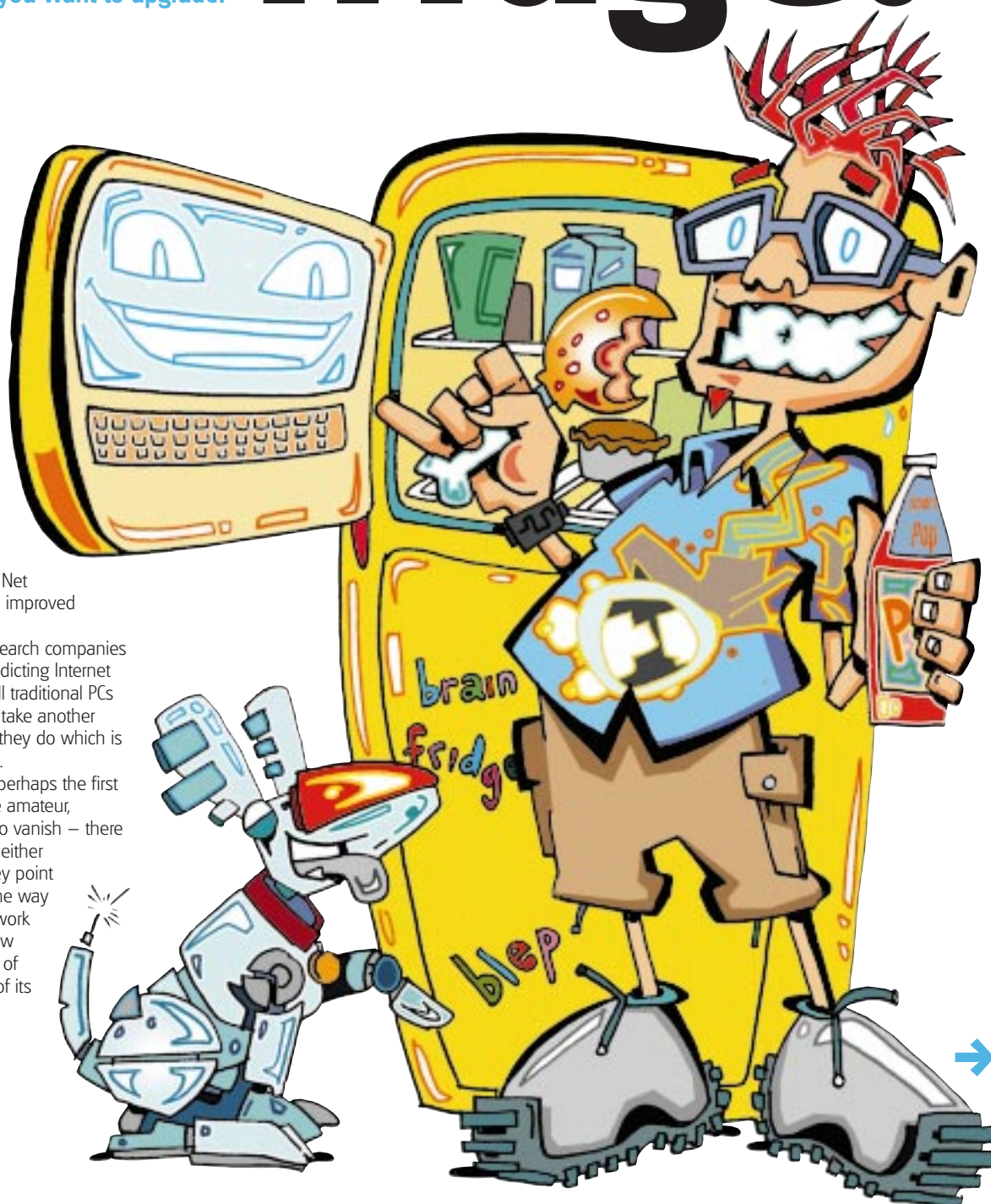
What do Net-connected appliances, Microsoft's .NET initiative and broadband Net access mean when taken together?

Jason Thomas knits the threads and finds it's your home that's the target... but will you want to upgrade?

**E**ver since the early days of the Net-connected Coke machine, Internet appliances have been seen as a bit of a joke. Students could check the remaining number of cans of Coke from their computers, saving a wasted journey if the machine was empty. It was a story that did the rounds in the days when the Net was seen as something quirky. Unusual and recent announcements – such as fridges you can browse the Net with – hardly seem to have improved the situation.

Yet, when renowned research companies like IDC publish statistics predicting Internet devices could start to outsell traditional PCs as early as 2001, it's time to take another look at them and ask what they do which is going to make us buy them.

The Coke machine was perhaps the first Internet appliance but those amateur, pioneering days are about to vanish – there are dozens of such devices either close, or on the market. They point the way to a revolution in the way most people's houses and work will change over the next few years, especially in the light of Microsoft's announcement of its Net-and-no-longer-the-PC strategy, called .NET.





## → Is this the home of the future?

A Net appliance for every room in your house, but can there really be any point to Web-enabling your iron?



### 1 Net Terminals

Internet.Terminal, from Vestel, will be one of the first devices to be based on the National Semiconductor Geode GXLV integrated X86-based WebPAD and Microsoft Web Companion reference designs. It will be available in three form factors: one with a flat-panel LCD; one with a 15-inch monitor; and the last a wireless Internet.Pad.

Simplicity is the product's watchword, so consumers will get a single start page when they switch on the device using Microsoft's 'instant on' technology. This start page has single-click access to e-mail, chat, shopping, search, news and other MSN applications. Windows CE is the operating system, Internet Explorer is the browser and MSN is the initial ISP, although others are planned. The interface is simplified to a single window environment. All this is supplied directly by Microsoft.

The Internet.Terminal is scheduled for release in the US this autumn – although no price, marketing model, or UK dates have been announced.

Other suppliers including Acer, Compaq and Philips have also said they will release MSN Web Companions.



### 4 Net.Phones

Net.Phone, from Vestel Electronics, features all the usual phone functions such as caller ID, call waiting, speed dial, a speakerphone, various volume and hold controls and an answering machine.

However, where it differs from a traditional phone is that it uses two lines – one for voice and one for data, enabling you to speak and surf via the colour touch-screen at the same time. Pre-set buttons also help you search the Yellow Pages, buy groceries, check film listings or do online banking. There's also a flip open keyboard for typing e-mail messages and URLs. The device can store up to five e-mail addresses, each with an attendant contact database.

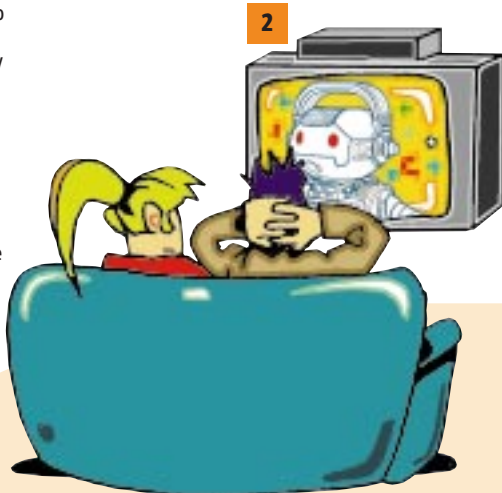


OFFICE

### 2 Internet TV

Set-top boxes from Granada which turn any digital or analog TV into an Internet TV, are available free from the company's high street outlets. They offer unlimited Net access through a phoneline using Granada's free ISP, sG-Wizz [www.g-wizz.com](http://www.g-wizz.com).

To apply for one you need to have visited the G-Wizz Web site and registered your request before the end of June. No trivial matter if you are one of the 70 per cent without a home PC – ironically, the target market.



SITTING ROOM



### 3 Groceries

The PSC Grocer-eScan makes use of Handspring Visor's hand-held Springboard expansion port and aims to Internet-enable your pantry. You can use it to scan bar codes directly from products in your fridge or pantry, or you can create your grocery list by sifting through a paper catalogue. Once your list is ready, you can beam it to the grocery store for delivery. Again, only US releases are planned for the time being.

HALL WAY



## 5 Personal aids

The Internet appliance market is moving quickly and in many different directions. There are many more that will emerge over the coming months: like electronic wallets that let you pay for goods wirelessly; personal navigators the size of a key ring that tell you where you are, point you in the right direction or even help locate a lost child or pet; or mobile MP3 players that can download streaming audio into a Walkman-like device.



## 6 Internet TV

For £199 you can buy a fully-fledged 14-inch Internet TV from Bush, which also has a built-in printer. It's operated by an infra-red remote control, which incorporates its own keyboard. Connection to the Internet is via a built-in Pace modem operated by a single yellow button on the handset. There will be two other screen sizes available – 21inch and 28-inch.



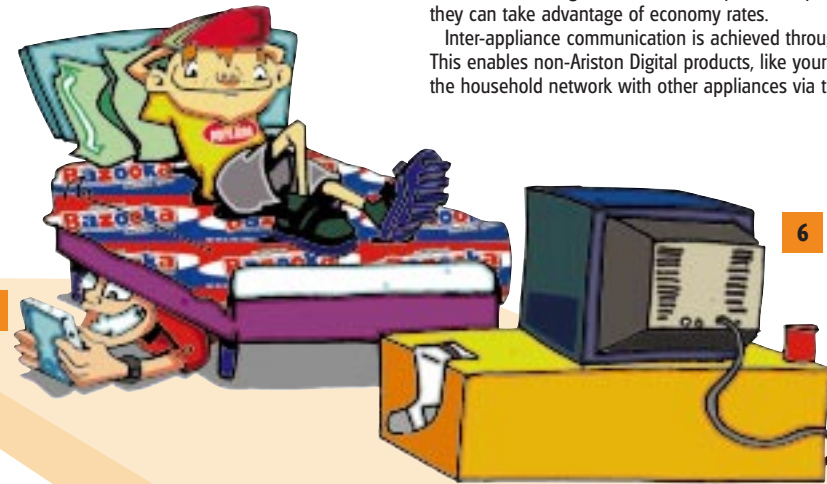
## 7 Washing machine

The Margherita2000.com from Italian firm Merloni (which owns the Ariston brand name), networks with other domestic appliances via the electricity supply and connects to the Internet through the phone line. In this way, even the humble iron could be part of the Internet. It's all part of what the company calls Ariston Digital and uses a technology called the Web Ready Application Protocol (WR@P).

The protocol has four main functions: 'teleassistance'; energy meterage; e-cooking; and inter-appliance communication. Ariston Digital appliances are able to communicate with the Ariston Digital Assistance Centre (available round the clock). When they malfunction, they pass on a complete dossier about their functioning during their lifetimes, making speedy resolution more likely. This and other external communication is carried out via the Telelink.

On the basis of the power that is being used, Ariston Digital appliances are able to self-regulate their consumption and pre-set their timing so that they can take advantage of economy rates.

Inter-appliance communication is achieved through the Digital Adapter. This enables non-Ariston Digital products, like your iron to communicate on the household network with other appliances via the current metre.

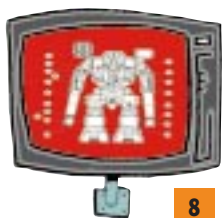


## BEDROOM



## 8 Internet TV

UK brown goods veteran Bush has announced an Internet TV. On sale now from Argos or Woolworths, it costs about £99. It's a set-top box to link your TV to the Net. Like the Granada offer, it comes with a remote keyboard. But, unlike the Granada offer, there's no registration. There's no sign up fee either and your access is all at the local call rate.



8



## KITCHEN

## → Anatomy of a Net appliance

### As good a place as any to start is the Electrolux Screenfridge

A prototype of this innovative product was shown at last year's Domotecnica in Cologne to world acclaim. Not only does it act as a message centre for the whole family (no more fridge magnets), it's a TV (so we can all watch the fridge instead) and a Net PC which monitors food quantities and automatically orders more from Internet-based supermarkets when you need them (Tesco are you listening?). It will even let you know when food is approaching its sell-by date, so

it's ideal for students. Other applications include connecting to recipe databases and non-food functions such as online banking.

Per Grunewald, head of Electrolux's new business division, feels the fridge is a natural place for such central functions: "We know from surveys that in most homes the refrigerator is by far the busiest spot in the house. All family members use the fridge, and not only for food – it's where you put messages, lists and things to do."

The Screenfridge is perhaps the 21st century equivalent of the university coffee machine in that it too is an imaginative and original use of the global Internet to satisfy specific needs. There's only one drawback: it's not available yet. Neither has a price been announced, although Electrolux says it may try lowering the price to consumers in return for displaying banners on their fridge doors. This is an increasingly common business model for Internet appliances.



**132** How to avoid buying bad memory chips – what to look out for

**133** Deleted a partition? Don't panic, we reveal a free utility which can help

**134** What is MIDI and how can you improve its quality?

**135** Everything you need to know on how to fit a second printer port

# PCPlus HELPDESK

→ We solve your PC problems

**A**nother packed **HelpDesk** for you this month as we unravel the usual collection of Windows, hardware, application and Internet-related problems. Please keep sending in your ideas and questions.

A couple of highlights this time around, include some advice on how to upgrade your memory and how to avoid being sold a pig in a poke at second hand stores; there's also an excellent reader tip on what to do if you accidentally zap the wrong partition when Fdisking around; finally there's a handy piece of advice on fitting extra printer ports – useful if you're busily layering on those extra devices.

We hope you enjoy this month's section and do write at the address below with your suggestions.



**Ian Sharpe/HelpDesk Editor**  
ian.sharpe@futurenet.co.uk

## Write in!

E-mail your questions to:  
ian.sharpe@futurenet.co.uk

Or write to: **HelpDesk, PC Plus**  
30 Monmouth Street  
Bath BA1 2BW

Or fax: 01225 732295

## Look out for these icons for useful extra information



Visit our forums at  
**www.pcplus.co.uk** and  
swap tips with other  
**PC Plus** readers



See our **SuperDisc** for  
useful software and  
extra tutorial files



When you see this, visit  
the Web site for more  
information, advice  
or support

## Help us help you!

We get thousands of e-mails a month so do please send your mails to the right department. If you are having CD problems e-mail [support@futurenet.co.uk](mailto:support@futurenet.co.uk).



↑ Part of a demo desktop replacement, written in HTML by Nick Cheesman. What are you waiting for? Go build your own!

## WINDOWS



|prog\files\helpdesk|

## Build your own desktop

**Q** I had a revelation (no, this isn't of the religious variety) which I would like to share with you and your readers. I have found a way (though I doubt I am the first) to launch Windows programs from within Internet Explorer.

Alright, so it's not that earth-shattering but it does have certain advantages. In effect, it enables the Windows interface to be fully customised and enables programs (including Control Panel applets) to be launched from links in a Web page. Pages can be themed (one for the kids, one for everyday use perhaps) with links not only to programs on the local drive but also sites on the Web.

The browser can be run automatically when the PC is

booted so you need never see the old Windows interface again.

Please take a look at the following URL for further info: [www.netcomuk.co.uk/~njc1/wbrow.htm](http://www.netcomuk.co.uk/~njc1/wbrow.htm). This gives a fuller explanation (the squiggle is a tilde ([Shift][#] on my keyboard) and the character after njc is the number one).  
**Nick Cheesman**

**A** This is a neat trick which you may like to explore with a view to building customised interfaces for Windows. The Dbrow folder is on the SuperDisc and must be placed in the root of drive C (C:\). Run DeskBro.htm to see the full demo.

The scrolling window is produced by the IFRAME tag. This denotes an inline frame – one that can be placed within a block of text. Read the full spec for it at [www.w3.org/TR/REC-html40/present/frames.html#h-16.5](http://www.w3.org/TR/REC-html40/present/frames.html#h-16.5) if you want to, but Nick's examples are easy to understand:

```
<IFRAME
SRC="c:\dbrow\tools\"
width="80" height="300"
border="0"></IFRAME>
```

This one is from tools.htm and opens a scrolling window on to the disk folder C:\dbrow\tools\. Nick's target folders are populated with shortcuts to applications. For the menu bar see Toolbar.htm. If you don't have a Web site, this is another use for HTML which can put a simpler face on Windows. Please note that IFRAME doesn't work in all browsers, and that a few of the demo links may not work on your machine. Nick is keen to receive comments and ideas – contact him at [njc1@netcomuk.co.uk](mailto:njc1@netcomuk.co.uk).

## HARDWARE

## Disk and memory queries



Perhaps you can help with the following queries: First, Fujitsu



## BUYER BEWARE

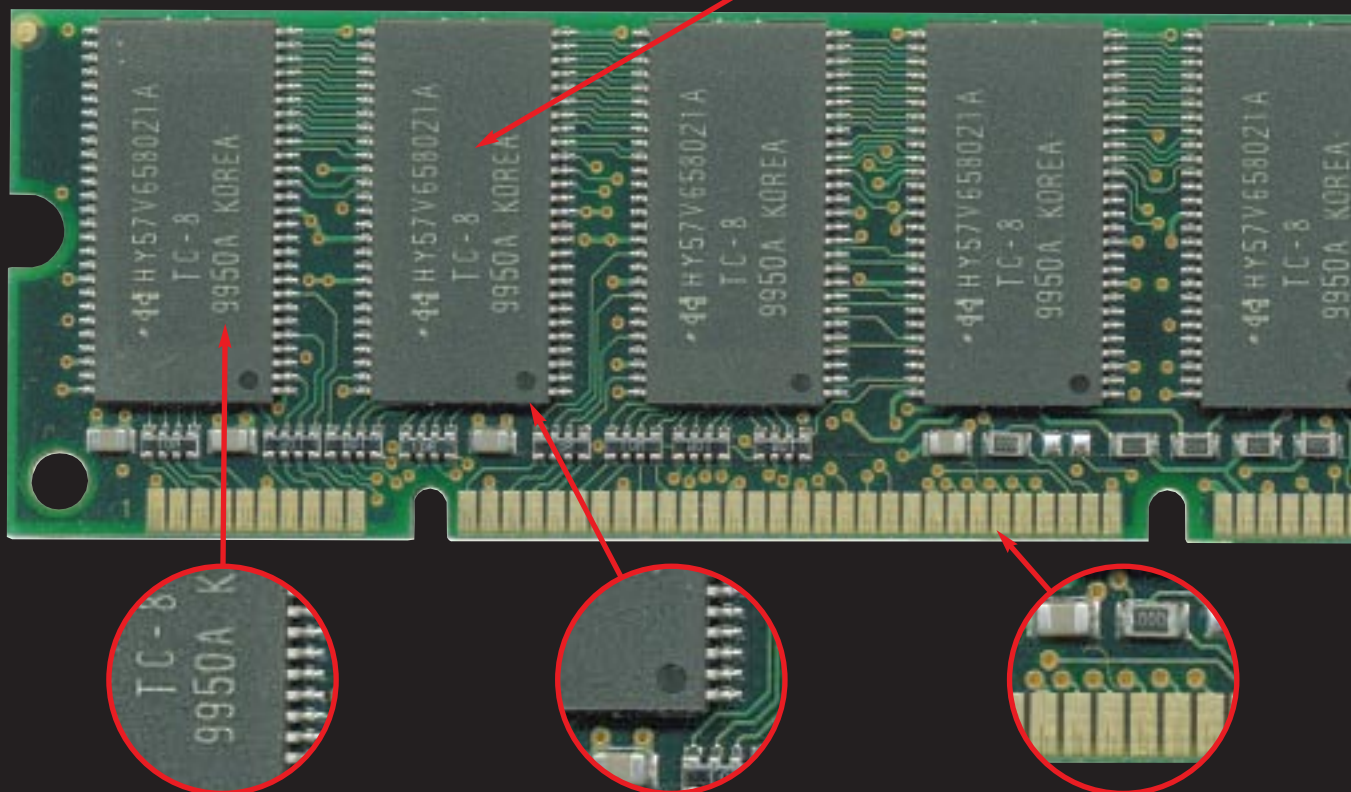
# Avoiding bad memories

Don't get ripped off when you're buying memory – learn how to spot dodgy modules

→ Memory bought from a reputable source shouldn't give cause for concern, but you have to be cautious with apparent bargains at computer fairs, car boot sales and small traders of doubtful reputation.

→ Here's how to tell your chips apart: memory chips are graded by the manufacturers. Top-quality modules are made with A-grade chips. Cheaper, unbranded modules may have been produced with B- or C-grade parts. The computer may work fine, but a sub-standard memory module is likely to have a shorter lifespan. It may also cause intermittent errors which result in odd crashes. This may not matter if you're on the tightest of budgets, the PC isn't mission-critical and the price is very favourable.

If possible, check that the manufacturer's codes agree with the specification you thought you were buying. This information is not easy to come by, but [www.chipmunk.nl/DRAM/ChipManufacturers.htm](http://www.chipmunk.nl/DRAM/ChipManufacturers.htm) is a good place to check.



The dates on the memory chips should all be the same or very close, and the chips should all be from the same manufacturer. (Note that not all chips have the easily read date marks described in the main article). If they aren't, the module has probably been remanufactured with good chips reclaimed from failed or second-hand modules. The chips may have been perfectly sound, but were they degraded by de- and re-soldering? You can't tell, so give them a miss.

Hold the module so light reflects off the top of the chips. Is the surface very matt instead of faintly reflective? Can you scratch off the markings with your fingernail? Do any recessed dots look indistinct? If the answer to any of these questions is yes, the original markings have been ground or etched off and the chips remarked. This does not necessarily indicate fraud, but it does raise a sizable question mark. Shop elsewhere.

If the chip dates are much over a year old, suspect that the module is second-hand. Stocks of memory turn over pretty quickly so it is unusual for modules to linger on the shelves for so long. Double-check by examining the edge contacts. Wear marks show that it has previously been installed, though perhaps only for testing. Signs of wear may be difficult to see with the naked eye, but are easy visible in the right light or with a magnifier.

8.4GB UDMA66 hard disk, correct 80-pin cable, Win98 SE: The BIOS detects a UDMA/66 drive but benchmark programs show read burst of 26MB/s. Fujitsu says that this is okay. Where has the claimed up to 66MB/s read burst speed gone?

Second, I cannot find a utility to identify and test the speed of SDRAM.

I have two 64MB modules marked as follows: LGS GM72V66841CT7J 9828 KOREA and HYUNDAI KOREA

GM72V66841ET7K 9943 AG4. I am sure that the Hyundai is PC100, but have no idea as to the LGS. Maurice Vale

**A** The disk speed sounds about right. UDMA/66 defines an interface capable of transferring data at up to 66MB/s. A disk does not have to be capable of delivering data at that rate. It just needs to conform to the UDMA/66 specification in terms of the protocols it uses, and that's enough to brand it as a UDMA/66

drive. In fact, the quickest of the 8.4GB UDMA/66 Fujitsu drives has an internal data transfer rate of 'up to 34MB/s', so you aren't going to better that.

Retailers have been playing this sleazy little trick for many years – trumpeting the theoretical maximum speed of the interface standard, and leaving the actual (considerably lower) data transfer rate of the device quietly tucked away on the specification sheet. Even then, the manufacturer's figure is a maximum under ideal

circumstances. In practice this will only be achieved occasionally.

You should also note that even if you did manage to get 66MB/s from a drive, your motherboard's chipset may throttle it back to half that.

That isn't to say UDMA/66 is no better than UDMA/33. The performance of newer drives is starting to creep beyond the upper limit of UDMA/33, so there is plenty of potential which will be increasingly exploited. UDMA/66 also has new functionality such as



better error detection. Regarding your memory, the four-digit numbers starting with '9' indicate the chips were manufactured in week 28 of 1998 and week 43 of 1999. GM7 series numbers identify chips manufactured by LGS (Lucky Goldstar) – a bit strange in the second case as Hyundai SDRAM codes begin with HY5.

Here's how the numbers break down for Lucky Goldstar SDRAM: GM7 = LGS identifier; 2 = SDRAM; V = 3.3 volts; first 6 = 64Megabits; Four or five digits beginning with the 6 signify the internal organisation. The 1 and the CT/ET weren't known at the place where I found all this [www.chipmunk.nl/DRAM/ChipManufacturers.htm](http://www.chipmunk.nl/DRAM/ChipManufacturers.htm), which also carries details on other manufacturers codes.

The final two characters tell you what you want to know: 7J and 7K both indicate PC100 memory. J series chips have a clock latency of

3, while K series have a clock latency of 2.

What the heck's all that about, then? Internally, memory is arranged in rows and columns. An electrical signal moves along the columns. This is the column access strobe, or CAS. Another signal, the row access strobe (RAS), moves through the rows. Data is accessed where the CAS and RAS intersect. When the CPU specifies a memory address, ultimately it is translated into CAS and RAS signals.

Clock latency, also known as CAS latency, is the ratio between the column access time and the length of a clock cycle, rounded up to the next whole number. Column access time is the delay between the CAS signal being applied and the data becoming available. So, essentially, a clock latency of 2 gives faster access than 3.

SDRAM can supply data in bursts, where the data from addresses immediately after the first one specified can be sent in sequence very quickly. Column access time refers to the first address of the burst only. Subsequent data is sent at the same speed, no matter what the initial delay.

Since data is generally accessed in chunks, the effect of a longer column access time is diminished and it doesn't matter too much. You can read more about this at [sysopt.earthweb.com/articles/latency/index.html](http://sysopt.earthweb.com/articles/latency/index.html).

## WINDOWS

### What the fff...?

**Q** I was surprised to discover a large number of temporary files in my Windows folder. All begin with the letters 'fff' and look like this: ffc99a5\_{9B71C481-42C2-11D4-8FB6-00C0DF46C661}.tmp. All are zero in size. Do you know what they are, and can I delete them?  
**Mark Reddish**

**A** I found a huge number of these files in my own Windows folder. It turns out there is a bug in a piece of software distributed with several Microsoft products which allows these files to accumulate without limit. Even though they are of zero-length and only occupy the tiny amount of disk space required for their entries in the folder listing, large numbers of them will impact performance.

Whenever a data file is opened or a program is run, Windows has to search through the directory until it finds the entry for the file

## DELVING DEEPER

# The end is nigh for UDMA/66!



**Drives should begin to hit the 66MB/s barrier by the end of next year. What happens then?**

The industry predicts that hard drives will be achieving 66MB/s burst rates by the end of 2001. So will that be the end of the road for improvements in disk throughput? Fortunately not. UDMA/100 – real name Ultra ATA/100 – is on the horizon. As the

name suggests, it raises the interface's speed to 100MB/s. Devised by Quantum, several other companies have adopted the new standard and it looks set to supplant UDMA/66. See [www.quantum.com/src/whitepapers/wp\\_ultraata100.htm](http://www.quantum.com/src/whitepapers/wp_ultraata100.htm).

being requested. Add several hundred junk files to one of the most frequently accessed folders on your PC, and it's bound to make a difference.

It would be easy to get bogged down in detail here, so I'll skim over the reason for it and just tell you that the culprit is a program called Mdm.exe – Machine Debug Manager – which has a role in program debugging. This is automatically run at startup and is also independently started by some programs.

MDM can be seen in the task list obtained by pressing [Ctrl][Alt][Del]. It's possible you may need to have it running, but there's a good chance you don't. To kill it off, open the registry (run Regedit.exe) and drill down to: HKEY\_LOCAL\_MACHINE \ Software \ Microsoft \ Windows \ CurrentVersion \ RunServices. From the Registry menu export the selected branch in case you find you need to reinstate it later. Then delete the Machine Debug Manager entry. Close Windows and restart. Delete any left-over temporary files.

If you find you really need MDM running, you can work round the problem in Win9x by placing the following line in Autoexec.bat. The easiest way to do this is to go to Start / Run and type Sysedit.

```
del \windows\fff*.tmp
```

If after restarting you can still see MDM in the task list, it's being run by another program as well as from the registry. Try renaming Mdm.exe in \Windows\system. You may have to reboot to MS-DOS mode to do this.

If you want to know more about Mdm.exe and why it has this problem, Microsoft Knowledge Base article Q221438 has the gory details.

## SOUND

### Capturing MIDI output

**Q** After many years of using trackers and similar music programs, and most recently the excellent Buzz [www.buzztrack.com](http://www.buzztrack.com), I decided to try to use more

## DELVING DEEPER

# The secret disk eaters



**Programs create temporary files for their own purposes, but don't always delete them afterwards**

Applications often need to open temporary files for their own purposes. For example, a program may need to store large chunks of data during the current session. One way to do this without chewing up large amounts of memory is to save it to a file – a temporary file. These normally have the extension '.tmp' and are silently created in the background.

Windows has an internal setting which tells any program that asks the preferred location for temporary files. By default, it is \Windows\temp but can be changed with the TEMP variable in Autoexec.bat, for example:

```
set temp=c:\temp
```

Many programs obey this setting, but some go their own way.

Temporary files should be automatically deleted when their parent program closes down, but they're left in the event of a crash or power loss. These can build up and, in some cases, occupy a lot of disk space.

Once a month, close all applications and run Windows' file finder. Search your disk for '\*.tmp'. When the results are in, sort them into date order by clicking the Modified column header. Delete all files more than a few days old. This guards against the occasional (and badly written) program which uses information in its old .tmp files, and also files which may be in use but temporarily closed.

## Reader Tip

# Restore a lost partition

**This little lifesaver could bail you out of big trouble**

Your readers may be interested to hear about a small program which has probably just saved my job after a mishap with Fdisk. I had been tasked with installing a second hard disk into my manager's computer. This disk had been taken from another machine and already had several partitions on it. The plan was to make the new drive the first one (C:) and demote the existing, slower drive to D: and E:.

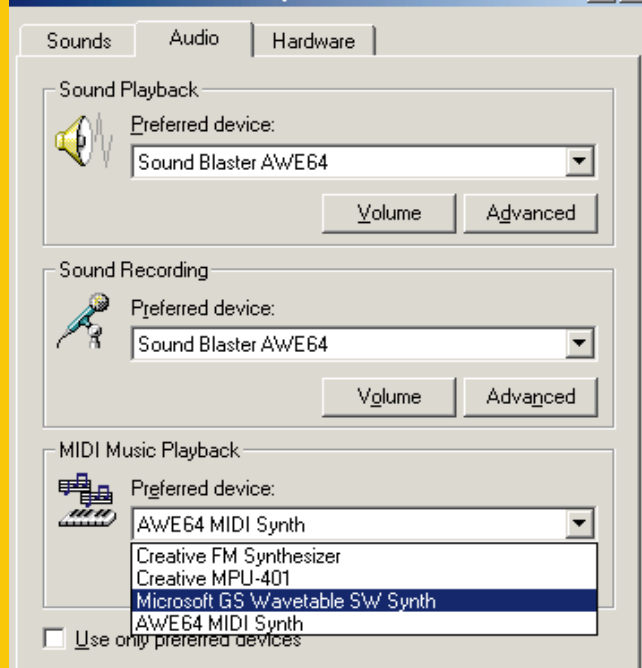
When the point came to Fdisk the new drive in preparation for making a new C: partition, I zapped her existing partitions! Milady was out that day and isn't big on backups. I was ready to clear my desk there and then, but a colleague calmed me down and we went looking for salvation on the Net.

We found a free program called MBRwork at [www.terabyteunlimited.com/freestuf.htm](http://www.terabyteunlimited.com/freestuf.htm). This little beauty saved my bacon by restoring all partitions to full working order.

**John Fielding**

→ It sounded too good to be true, so I tried it on a couple of partitions deliberately Fdisk-ed out of existence. To my surprise, MBRwork did the business. When it sees a drive with a zeroed-out partition table, MBRwork sprouts a new menu option which offers to restore FAT, HPFS and NTFS partitions. And it does, too. Definitely one for your emergency boot-up disk!

## Sounds and Multimedia Properties



### DELVING DEEPER

## MIDI in a nutshell



**What is MIDI and how can you improve its quality?**

A WAV file or MP3 stores sound in a similar way to bitmap image formats – a sampled and digitised representation of the analog original. MIDI files are more akin to vector-format files. MIDI stands for Musical Instrument Digital Interface and a MIDI file stores a set of instructions which the output device follows in order to recreate the sound.

The device can be a musical instrument connected via its MIDI port to the PC, the MIDI unit on your sound card, or a software renderer which saves its output to a WAV file. The quality of the end product varies immensely, depending on the capabilities of the output device and how it has been set up.

Here's something to try which could dramatically improve the quality of your

MIDI audio. Grab a reasonably complex MIDI file. These files end in '.mid'. If you can't find one on your hard disk, there are plenty on the Net – type 'MIDI archives' into your favourite search engine and brace yourself for the avalanche.

Double-click the file and it'll probably come up in Media Player. After listening to the quality, stop the playback and go to the multimedia properties section in Control Panel. There should be a MIDI output option which lists more than one MIDI handler. Try each one in turn (except for 'external instrument' unless you have one) and replay the piece. You will probably hear a massive difference in quality, and it may well be that the default setting was seriously underplaying your hardware. Don't change setting while the file is playing.

↑ These are the MIDI output options in my Windows 2000 installation. Some give far better quality than others.

and software. This has included using Cubasis VST (supplied with my SBLive Platinum), MIDI keyboards and so on.

All the tasks that are simple using non-MIDI software are virtually impossible as soon as you try to use MIDI! The biggest is trying to record the final output as a WAV file. Please do not tell me to plug a cable from the line-in to the line-out on my sound card – I don't fancy blowing my speakers with feedback.

Also, a MIDI renderer is not a solution, partly because of the expense but mainly because it will not enable me to use the instruments I want.

Stephen Horne

**A** The reason you can't find a special program is that it's easily done with a standard WAV file recorder. Just start it recording, play your MIDI file and, as long as you haven't mucked up the mixer settings, the recorder should capture the rendered MIDI output. Easy but not obvious. Some sound cards don't allow it, but it works for me.

### WINDOWS

## DUN password not remembered

**Q** I had an big clear out of my hard disk recently. Part of this involved the

use of the Sound Mechanic shareware utility which cleans out gunk from the registry and removes redundant files. Everything seems to have gone well except for one untoward side-effect: dial-up networking no longer remembers my password. I sought advice in a newsgroup and was told to delete my password list file. I tried this and it did not work. Is there anything more I can try? I use Windows 98.  
Nick Mercer

**A** Norwegian reader Arne Solheim Kaldahl also e-mailed to tell me about System Mechanic following the item on clearing out the registry in the July issue. You can get a copy from [www.iolo.com](http://www.iolo.com). I didn't have a problem with dial-up networking, but some of its TweakUI-like functions didn't work properly for me.

There's a list of measures you should work through. These assume the Save Password box is not greyed out, which is another problem entirely (dealt with in Knowledge Base article Q137361):

→ Check you are logged on to Windows. If you are prompted to log on at startup and just cancel the dialog, there is no current user and so there is no corresponding password file.

→ Check that your user name does not contain characters not allowed in a filename.

→ Check that password caching is enabled. To do this, run Regedit and go to: HKEY\_LOCAL\_MACHINE \ Software \ Microsoft \ Windows \ CurrentVersion \ Policies \ Network. Look for a value called DisablePwdCaching. If it exists, make sure it is set to '0'.

You can change the setting by double-clicking it. If the value does not exist, create it with Edit / New / DWORD value. Close Regedit and

then restart the machine.

→ Your password list (PWL) file may be damaged. Go into the Windows folder and look for a file whose name is your user name plus '.pwl'. Rename it, but be sure to rename the '.pwl' part because Windows loads these files automatically. Restart Windows. Log on with your normal user name and usual password.

→ If you have a file called Rna.pwl, rename it and restart. If you don't, don't worry about it.

→ A dial-up networking file may be damaged. Remove and reinstall dial-up networking. The method, plus information on less common causes of this problem, is to be found in Knowledge Base article Q148925.

Note that if any of these steps works the first time you log on to the Net afterwards you will probably have to type in the user name and password. Only then will the password be remembered.

### INTERNET

## ZoneAlarm crying wolf

**Q** Being rather paranoid I recently installed the ZoneAlarm firewall.

According to ZoneAlarm there is a program called wcmdmgr that accesses the Web frequently. What is this program and what is it doing?

S Ellwood

**A** Paranoia is healthy up to a point but not when you get paranoid over things you agreed to! It sounds like you have installed the WildTangent Web driver. This program enables developers to embed into Web pages multimedia content that has access to DirectX, 3D functions and so on.

There are some impressive demos at [www.wildtangent.com](http://www.wildtangent.com)



↑ This Tetris-style game on WildTangent's site is quick, slick and way too addictive!



and it's worth exploring the site. Programmers will be interested to know that the requisite developer tools are available for download.

WildTangent's driver is required to view the demos. It too is available for download and is also packaged with some applications. Web pages that make use of the driver may prompt you to install it.

When installing the driver, you should see a dialog in which you agree to WildTangent's license conditions. These include storage of information on the company's server which, says WildTangent, enables the software to periodically check whether there is an update available for your system. Wcmdmgr.exe is the program that does this, and ZoneAlarm is alerting you to this legitimate activity.

If you want to uninstall the WildTangent software, instructions are given at the Web site.

The Control Panel should contain a 'WildTangent Control Panel' applet which enables you to disable the auto-update feature.

## HARDWARE

### Scanner+Zip+printer?

**Q** I want to connect a printer (Epson Stylus Colour 300), a scanner (Microtek Phantom 330 CX) and an Iomega Zip 100 drive. If I connect the printer with one of the others, no problem. However, if I connect it with both scanner and Zip drive neither the scanner nor the drive work. Can you help me please?

Andre Lieberom

**A** The parallel port was designed to run one device only. Getting two to work is pretty clever, but the peripheral manufacturers manage it. Three devices, though? You would expect it to be hit and miss. A lot depends on the devices involved. Try tinkering with these:

→ Zip drives are said to like to be first in the chain, but try a different order for drive and scanner.

→ Look for the parallel port settings in the BIOS setup screen. Make a note of the current mode of operation and then try different ones. The options are usually something like normal or SPP, bi-directional, ECP and EPP. Microtek's documentation specifies EPP as the required mode for the scanner. It's recommended for Zip drives too.

→ After this, your options are to buy a second parallel port or to buy a printer switch. I assume you want a

cheapish fix, so let's look at the pros and cons of both.

A second printer port can be bought cheaply. For example, a generic ISA one costs £11.75 in the I/O cards section at [www.simply.co.uk](http://www.simply.co.uk) (product code I00003). It would be the most convenient solution once you had it working, but there lies the catch.

These things can slot in without a hitch; sometimes they're a nightmare. The problem is that the resources required by the new port may conflict with the requirements of hardware already fitted. For more information see **How to fit a second printer port**, opposite.

Once installed, you could leave the scanner and printer on the original port and put the Zip drive on the new one. The driver should detect the new location of the drive without needing to be configured.

Be wary of the seemingly easy option of buying a parallel port adaptor for the Universal Serial Bus port. Not only is it more expensive, but you can't be sure that the Zip or scanner drivers will be happy with this very non-standard arrangement. Iomega warns against these adaptors unless the manufacturer specifically says it will work with a Zip drive.

Printer switches are sold for the purpose of connecting two printers to one printer port, or two PCs to one printer. A simple one can be had for about £13 from Global Direct, [www.globaldirect.co.uk](http://www.globaldirect.co.uk). You would need a straight-through cable to connect the switch to the PC, pushing the price up to around double that of a second port.

You would put the Zip drive and printer on one outlet from the switch box and the scanner on the other — or the other way round. If buying a switch, you would want a manual one, not automatic, as the auto models are less likely to be compatible with what you are trying to do.

I haven't tried running a Zip drive or scanner through a switch box, so there is a question mark over whether they'll be happy with the longer signal path — the Zip drive is supplied with a short cable designed by Iomega. A data switch is going to add six feet of generic cable to that, plus two extra plugs and the switch mechanism.

It's also possible that the driver for the Zip drive or the scanner will object to the device not being present sometimes, for example during boot-up. This is certainly a problem with Zip drives.

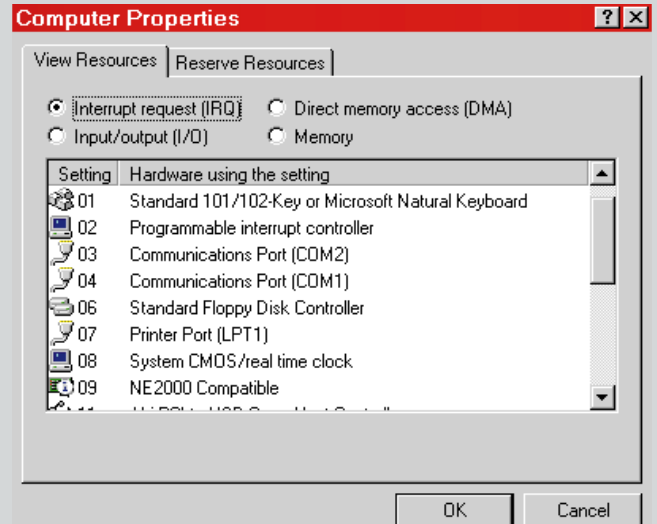
So, although the switch idea sounds tempting at first, it could prove troublesome in practice.

## UPGRADING

# How to fit a second printer port



This cheap upgrade could solve your problems with connecting multiple devices



↑ Device Manager lists occupied IRQs and I/O addresses. PCI cards can share an IRQ, ISA cards cannot.

In the main text I discuss the possibility of adding a second printer port to cater for multiple parallel peripherals that won't live together on a single connection. I prefer to talk about kit I've actually used, so I put my money where my mouth is and splashed out on one of the Simply cards.

The data sheet on the Web site is way out of date. The configuration options on the card I got are far more limited than the ones listed by Simply. Mine can be configured as LPT1, 2 or 3 and is selectable between SPP mode (slow) or EPP (faster). It's important that the new port can work in something better than SPP mode. The unit can be set to IRQ 5 or 7 and will use I/O address 278, 378 or 3BC.

**1** Before you buy, go to the Device Manager tab of the System Properties dialog. Double-click 'Computer'. All the occupied IRQ numbers are listed so you can see what's free. The operating system generally sorts these things out for Plug-and-Play PCI cards, but cheap plug-in parallel ports are normally the old ISA style and you have to configure them yourself.

Either IRQ 5 or 7 must be vacant for the Simply port, or you must be able to shuffle the resources of the other cards to make 5 or 7 free. Sound cards often sit on IRQ 5. IRQ 7 is standard for the first parallel port, but this can often be reconfigured in the BIOS setup screen along with the I/O address. A little trick that may help is that if you only use one serial port, you can disable the other in the BIOS and remove it from Device Manager to free up its resources.

**2** In Device Manager there is also a radio button to show I/O address

usage. One of the addresses required for the second port must be unused. You should only need to worry about the first of the two figures listed by Device Manager.

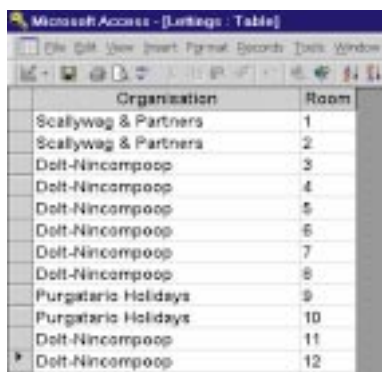
**3** If the coast is clear on the resources front, and you have a free ISA slot (the long black ones next to the short white PCI slots) then it's game on. If you see trouble and aren't confident about solving these issues, it's best to wheel the computer into a local emporium of good repute, pay a bit extra, and have the device fitted for you. That said, some PCs are so chock-full that there is no way to install new expansion boards.

**4** I configured my card for IRQ 5, address 278, LPT2, and EPP mode. After switching off the PC, I plugged the card in and connected the Zip drive. Back in Windows I ran the Add New Hardware wizard in Control Panel. I opted to select new hardware from the list and, under 'Ports (COM and LPT)' I chose 'Printer Port' under the standard types.

The I/O address shown by the wizard was wrong, but that can't be changed here. Afterwards I went to Device Manager, double-clicked the new port, and chose the correct address on the Resources tab. Oddly, no IRQ was listed, but after rebooting I noted that the BIOS listed the new port. There are no settings in my BIOS setup screen for the second port, but check anyway.

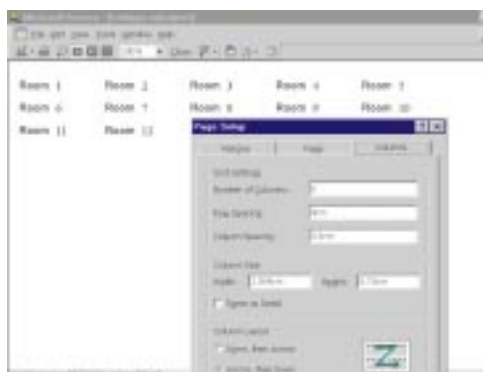
**5** With Windows running, I found that Device Manager now listed LPT1 and LPT2, plus a non-functioning LPT port item. I removed this. The lack of a yellow marker against the Iomega Parallel Port Interface item under SCSI Devices indicated that it had found the Zip drive on LPT2. And indeed it was accessible through My Computer — job done!



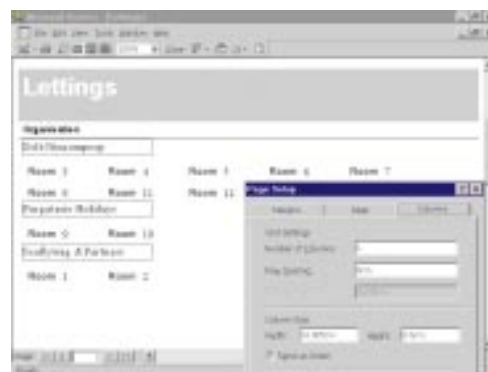


Organisation	Room
Scallywag & Partners	1
Scallywag & Partners	2
Delt-Nincompoop	3
Delt-Nincompoop	4
Delt-Nincompoop	5
Delt-Nincompoop	6
Delt-Nincompoop	7
Delt-Nincompoop	8
Purgatorio Holidays	9
Purgatorio Holidays	10
Delt-Nincompoop	11
Delt-Nincompoop	12

↑ Our task is to produce a report which lists the room numbers used by each organisation without filling a book.



↑ You need a sub-report with everything suppressed apart from the room numbers and a 'Room' label.



↑ The sub-report is embedded in a main report which provides the headings in a single-column page format.

## MS ACCESS

### Building horizontal reports

**Q** I have an Access 97 database containing a table which holds a record for each room in a building and shows the organisation occupying that room. I want to be able to produce a report showing each organisation and the rooms occupied. Because there are a lot of records I don't want a listing of the records, rather a horizontal list, that is:

**Org1 Room1, Room2, Room3  
Org2 Room4, Room5, Room6,  
Room7, Room8**

**The number of rooms per organisation will vary from one to maybe 50. Can you help please?**  
**Simon Holland**

**A** I expect that what you have at the moment is a report grouped by organisation. Each organisation's name is a heading beneath which are listed, in one column, the rooms they occupy.

If you were to make this a multi-column report, the room number records could go left to right across the page. This would almost give what you want, but there is a snag. All columns must be the same width, and group headings are placed in the first column. Columns narrow enough to make the layout of the room numbers look right will severely truncate the titles.

### Making a sub-report

The way round this is to make the room numbers a sub-report embedded in the main report. The sub-report is set to narrow multi-column format while the main report sticks with the default single column, allowing the headings to be as wide as necessary.

Here's how to set it up from scratch, assuming the fields in question are called Organisation and Room.

Start the Report Wizard. Move the Organisation and Room fields to the Selected Fields list. Click Next and you are asked if you want to add grouping levels. On the left, double-click Organisation. On another occasion you may want to refine the report in later parts of the Wizard but, for now, click Finish. This will give you room numbers listed in a column.

Go to Design view. You need to delete the Room field from the Detail band, and also the Room column heading from the Page Header band. The Detail band isn't going to be used at all but will produce white space on the page, so right-click it, select Properties and, on the Format tab, switch the Visible property to 'No'.

The sub-report goes in the Organisation Header band. Why not in Details? Because the sub-report will contain the details. Putting the sub-report in the Details band will make it repeat down the page.

Click the Subform/Subreport button in the Toolbox. Drag out a rectangle nearly the full width of the page within the Organisation Header area. A wizard should pop up where you define the sub-report.

### A matter of definition

If you had a sub-report defined, you would be able to select it by clicking Reports and Forms and picking it from the list. We have to define one from scratch, so go with Table/Query and click Next. If necessary, select the relevant table. Move both Organisation and Room fields into the Selected Fields list. Stick with the default settings in the next two pages of the wizard.

You should now be back in design view for the main report. Make sure the sub-report is not selected – click a blank part of the report if necessary. Now

double-click the sub-report box, to take you to its design view.

Suppress its header by right-clicking there (in the Report Header strip, not inside the boxes) and switch Visible to 'No' in the Properties dialog. Close the dialog. Delete the Organisation field from the Details band. We must now make the sub-report multi-column. Go to File, Page Setup. On the Columns tab of the Page Setup dialog you should change the number of columns to six. Reduce the spacing to 0.3cm.

### Column width

Turn off 'Same as detail' in the Column Size section. Otherwise, each of your six columns will try to be as wide as the entire report, which isn't right. The total width of the columns, plus the gaps between columns, must be no more than the width of the sub-report. Since this

has to fit between the page margins, 2cm should be safe. You can fine-tune this later. Close the dialog.

Now drag the left-hand edge of the Room field in the Detail band, in order to reduce its width to accommodate two or three digits only. This leaves a gap on the left where you can place a label in which you type 'Room'. This becomes a prefix for each room number. Move the pair of boxes to the far left, or they will be outside the column width and will not be displayed. Switch to Print Preview. You should see nothing apart from rows of Room 'x' where 'x' is a number.

Close the sub-report and agree to save it. Make sure the sub-report area is the full width of the main report, and delete the label that was generated for it by the wizard. Take care not to obscure the Organisation field.

## DELVING DEEPER

### Printer port modes



**Your parallel port may be operating at a fraction of its potential speed. Here's how to check it out.**

Somewhere in the BIOS setup screens you should find a setting for the printer port mode. This has a large effect on the port's performance. These are the common options, though your BIOS may not list them all:

#### SPP or Normal

SPP stands for Standard Parallel Port. This was the mode of operation of the printer ports on the very first PCs over 20 years ago. It is slow and has very limited provision for the connected device to talk back to the computer. Avoid it if possible!

#### Bi-di

An upgraded standard first used on the IBM PS/2. Still slow, but bi-directional communication enables better integration between printer and computer and makes it feasible to connect other types of peripheral such as drives and scanners.

#### EPP

The Enhanced Parallel Port is considerably faster. Two versions may be available (v1.7 and v1.9) because some PC manufacturers adopted the port before the standard had been ratified. Version 1.9 is the full, rubber-stamped EPP mode.

#### ECP

Potentially faster still than EPP, the Extended Capabilities Port is best suited to extended data flow in one direction, such as with a scanner or printer. EPP is better suited to rapid changes in direction of data flow, as with storage devices.

Some peripherals won't work satisfactorily with ECP but may work with EPP. Only use Normal/SPP/Bi-di if you can't make ECP or EPP work. The very first edition of Windows 95 didn't support ECP, but this was added in subsequent versions and by a service pack.



## AUTOMATING WINDOWS

# An update on Windows Scripting



**The latest version of Windows Scripting has new tricks up its sleeve, as demonstrated by this handy utility to pause the printer**

Last month I mentioned that the Windows Scripting Host and VBScript aren't good for driving the Windows user interface through the use of simulated keystrokes.

Since then I have been playing with the latest version of the software and things have improved somewhat. If you want to try it yourself and have any version of Windows other than 2000, you need to download the upgrade to Windows Script 5.1 / WSH 2.0 from [www.microsoft.com/msdownload/vbscript/scripting.asp](http://www.microsoft.com/msdownload/vbscript/scripting.asp).

In the script shown here, I wrote it so that I could have a panic button for times when I've just clicked OK in a print dialog, and then decide that I don't want to print 30 pages without running the spelling checker.

The script runs the Printers applet in Control Panel, selects the printer named in the script and executes File / Pause Printing. I put a shortcut to this script on my Start menu and assigned a keyboard shortcut to it. Now I can pause printing at the push of a button.

New methods of the Shell object, such as SendKeys, make it possible to fire simulated keystrokes into Windows. Windows Scripting still leaves much to be desired, though – for example there's no mechanism to wait until certain text has appeared in a window. If you want to find the commands required to run Control Panel applets, they are listed in Knowledge Base article Q192806.

```

' Pause / resume printing on named printer
' Requires Windows Script 5.1 / WSH 2.0
' Save as text file with .vbs extension
' and double-click to run.
set WshShell = CreateObject("WScript.Shell")
WshShell.Run "control printers"
Do Until WshShell.AppActivate("Printers")
WScript.Sleep 100
Loop
WshShell.SendKeys "HP LaserJet 4P"
WshShell.SendKeys "%Pa"
    
```

- 1 Create an instance of the Shell object
- 2 Use it to run the Printers applet in Control Panel
- 3 Bide time until the Printers window appears
- 4 Send the name of the printer to select it. Change this line to match your own printer
- 5 Send [Alt][F] to access the File menu, then [A] to pause/unpause

## MS WORD



|prog|files\helpdesk|

## Automating find and replace

**Q** Is there a way to automate multiple find and replace operations in Word documents? What I have in mind is an easily maintainable file containing a list of words and phrases to search for, along with corresponding replacements. I know I can record a macro, but I am not a programmer so editing the list would be difficult.

Paul Jones

**A** I wondered whether a general-purpose search-and-replace tool would tackle this. There are many such utilities around and it's worth having one in your toolkit, especially if you run a Web

site. A good search-and-replace tool enables you to quickly make global changes on a group of files, with multiple actions in each file.

While checking out this option I came across a well-presented, capable and free program called BK ReplaceEm. The home page is [www.orbit.org/replace/](http://www.orbit.org/replace/). My tests with BK ReplaceEm were successful on plain text files but, as I suspected it would, made Word documents unusable.

The difficulty is that general search-and-replace tools can't account for the complex data structures inside a document file. The simple answer to your problem seems to be a Word macro that reads its search/replace list from a document. I knocked up a very basic effort which works well enough on straight textual replacement. What it won't do is let you take advantage of the checkbox options you get when you press the More button in Word's Find and Replace dialog.

As with other macros I produce for **HelpDesk**, if enough people express an interest in additional features and they're feasible, I will consider producing an enhanced version for a future issue.

Copy the MultiReplace.dot template from the **SuperDisc** to a convenient location on your hard drive. Go to Tools / Templates and Add-Ins. Click Add and locate the file. Close the dialog.

Now enter your searched-for strings and replacements in an otherwise empty document. The searched-for text goes at the start of a line. Follow it with a tab, then type the replace-with text. Enter as many pairs as you like, each on its own line.

You are allowed to enter special codes such as ^t and ^p – the symbols for Tab and the paragraph mark. If you want to replace something with nothing (delete it) you can press [Return] immediately after [Tab] to leave the replace-with entry blank.

Save this document as FindAndReplace.doc in C:\My documents. The macro is written to look for a file of that name in that location. All you have to do now is load the document you want to process, and go to Tools / Macro / Macros. Pick and run the macro MultiReplace.

## NETWORKING

### Which network card?

**Q** I have a Pentium 90 and am soon going to upgrade to an 800 – 1,000MHz PC. Is it worth networking the two and storing files in the P90 to keep speed up on the 800MHz or will 10Mbps be too slow and make a new bottleneck in the system?

Marco

**A** If the files are large and will be travelling across the network often then yes, 10Mbps is likely to be a bottleneck. Smaller files, or ones accessed rarely, won't be much of a hindrance. However, if I were buying network gear for two machines now, I would leave 10Mbps out of the equation. Two PCs can be networked at 100Mbps without a hub if you use a crossover cable, so it only costs a little more. 100Mbps is a big improvement when you start juggling large files such as audio and video.

Three or more machines would definitely require a hub or switch, of course. If that isn't a consideration, there's no question in my mind – a couple of PCI 100Mbps cards are the way to go.

## → Further help resources

How to get information direct from manufacturers and help from fellow users



If you need an updated driver or other help direct from a manufacturer, see if it has a Web site. One of the search engines will help you locate it – for example [www.mamma.com](http://www.mamma.com), [www.google.com](http://www.google.com) and [www.northernlight.com](http://www.northernlight.com).

I have compiled a list of Internet addresses of many leading hardware and software manufacturers. It is in the file hsnets.htm which you will find on the **SuperDisc** every month. Copy the Sites folder to your hard disk and bookmark hsnets.htm for instant access.

If what you want isn't there and the general search engines turn up tons of irrelevant links, try [www.service911.com/content/SupportHelp.asp](http://www.service911.com/content/SupportHelp.asp) which has a searchable database of technical support contacts. If you find a site I haven't listed but which could be useful to other readers, please drop me a line at [ian.sharpe@futurenet.co.uk](mailto:ian.sharpe@futurenet.co.uk).

Newsgroups are also a great source of help and advice. It is likely that your question has been asked and answered before so, before posting a message, search previous postings at [www.deja.com](http://www.deja.com). And don't forget **PC Plus'** own newsgroups at [www.pcplus.co.uk](http://www.pcplus.co.uk).

# PCPlus MAILBOX

➔ This month: The **PC Plus** redesign, an ISP that earns you shares and biometrics really is on the way to the desktop

## Wind of change

I like the new look **PC Plus**. In my three years reading **PC Plus**, you have finally made what I think is the ultimate PC magazine. I felt before that it was out-of-date and, you were right, it needed an update. Since the beginning of this year we have new sections like **Wap Secrets** which has helped me with my own new WAP site and **Internet Buyer** which has made the former **Buy Direct** section interactive and simpler. This last issue was really the best issue of all time! Good one **PCP** team!

**Chris Ridsill, Leeds**



↑ The new look **PC Plus**. Let us know what you think.

## Free lunch

I read with some interest Mike Williams' recent review of free ISPs in **PC Plus**. All

of the ISPs mentioned met the task of supplying Internet access at no cost extra than the phone call. With the plethora of free ISPs, I assume you had some criteria for restricting your review to these few. One ISP you failed to mention which gives a good service for free, also 'pays' you to use the service. The ISP with which I connect 'pays' shares in itself for usage. Although these shares are only worth about 28p each, the accumulation over a month roughly pays for the cost of the telephone bill. These shares are fully tradable and since signing up in January, I have earned approximately £70 worth of shares. As far as I am aware no other ISP offers this kind of service and I feel it deserves some mention. The ISP is Totalise and can be found at [www.totalise.co.uk](http://www.totalise.co.uk).

**Cliff Butcher, via e-mail**

**PCP'S REPLY:** Thanks, Cliff. Anything like this has to be worth a go. If it's free, what have you got to lose?

## Out and about

For your useful Web site list, you might like to mention to readers the London Transport site at [www.londontransport.co.uk](http://www.londontransport.co.uk). It is quite a good site and looks like getting a lot better with a promised 'A to B' route planner. I was looking for a bus route through London, and was pleasantly surprised to find the London Bus Map downloadable in PDF format from [www.londontransport.co.uk/buses/mab\\_home.shtml](http://www.londontransport.co.uk/buses/mab_home.shtml). This site is extremely useful for anyone planning a trip into London.

**Tony Martin, via e-mail**

## Touchy typists

What a cheek! Regarding last month's 'Keyboard Confusion' letter from Tony Sandy: doesn't he realise how many years young girls/women/boys/men have toiled (and how many broken finger nails I have incurred) learning to use the Qwerty keyboard? I can't believe that he wants to abandon this method in favour of the original layout. I spent over £200 and two years training to achieve Pitman I, II and III in typing. Years and years of experience of the Qwerty keyboard has ensured bosses get all their letters typed and out in a day, not in a week! Millions of typists in the UK would not be amused to find that their hard earned money spent on typing

courses might as well have been thrown down the drain if Tony has his way.

**Linda Prytherch, via e-mail**

**PCP'S REPLY:** All very true but it's a shame that we're all still saddled with the difficult to learn, RSI-causing keyboard that was invented all those years ago. Will voice recognition solve the problem or will we all go hoarse? Let us know what you think.

## Ex-Microsoft lover

In the **Mailbox** 167, a letter from Ken Heatley entitled 'Microsoft lover' caught my attention. Ken thinks that you are concentrating too much on Linux and would like to see less of it. The thing that he doesn't get is that Linux runs on a PC just as much as Windows does, so it has just as much right to be in your magazine! I admit (shamelessly) that I used to be a Microsoft lover until I realised how much more there was out there!

I have Linux and Windows on two machines with dual boot, but I only use Windows when I take work home with me, as I am a VB programmer. Ken is also just repeating what is usually mentioned once per issue, and your reply is usually something along the lines of "the amount of Windows-related articles and advertisements in the magazine has not diminished because of Linux. It is the size of the magazine that has grown!"

Obviously, this person does not always read **Mailbox** or they would have noticed this. I think you are doing a great job providing for both Windows and Linux users, so keep up the good work.

**Colin Anderson, via e-mail**

## Silence is golden

Am I the only sensible person left in the world? Am I the only person who has discovered the benefits of under-clocking? The modern PC is a noisy contraption, mainly because of the huge fans. Over-clocking only makes it worse, leading to tears before bedtime. My solution is to promote under-clocking. It invalidates your warranty, but it is worth it.

The evidence? I recently bought a new PC, a Pentium III 750 MHz, costing about a £1,000. By tinkering with the processor switches, I managed to under-clock it down to the equivalent of a Pentium III 500MHz. Then it ran cool enough that I

## Write to PCPlus

### Let us know what you think of the magazine

What do you like (or dislike) about the magazine? What would you like to see? And what do you think about the products and companies in the PC industry? Whatever the answer, we want to know.

➔ Please write in. Short, concise letters or e-mails are much more likely to be used, as life's too short to extract the important bits from a massive submission. We give a Star Letter prize away in every issue, so get those letters coming in.

➔ E-mail is the best way to send your comments. For **Mailbox** send them to: [pcplus.editor@futurenet.co.uk](mailto:pcplus.editor@futurenet.co.uk) or fax them to: 01225 732295.

➔ Alternatively, print your letter and send to: **Mailbox, PC Plus, Future Publishing, 30 Monmouth Street, Bath BA1 2BW.**

➔ Every letter will be read by the editor, and the most interesting (not the most complimentary!) letters will be printed and answered on these pages. We reserve the right to edit letters to fit, and the opinions expressed on these pages are those of PC Plus readers, and do not necessarily represent those of the editorial team. Letters and e-mails are assumed to be for publication unless stated otherwise, and published versions of letters become copyright Future Publishing.

➔ We regret that we can't always answer letters personally, but questions of general interest may also be covered in Help Screen.



could throw away the fan, and now my PC is almost silent, though a tad slower.

If enough research went into this area we could probably downgrade the latest processors into the equivalent of a 486 DX4/100 within a year, and the result would hopefully run cool enough to chill beer. The possibilities are endless.

**Karl Drinkwater, via e-mail**

**PCP'S REPLY:** We're sending the van around now, Karl. Just go along with the nice men...

### Cut out and keep

I used to be able to cut out articles from the **Help Screen/Hands On** sections and file them away separately under Delphi, Java, Linux and so on. There was always an advertisement between articles or the article was contained on pages away from other items. Now a sheet can contain parts of two items and I have to discard one of the two items. A photocopier is not available to me because I work in a controlled security area. This has happened since new year and I have had missed a number of useful looking articles since then. Just a little thought on page layout would solve this. As a system admin for Unix and NT and computer hobbyist, I would appreciate any effort to improve your magazine. I prefer your magazine for its varied articles and Linux coverage.

**Les Bramwell, via e-mail**

**PCP'S REPLY:** You'll be pleased to hear that a fully printable PDF version of **PC Plus** will soon appear online. For obvious reasons, we'll be running this a couple of months behind the printed version, but you'll be able to print out any article from any recent issue, completely free.

### PRIZE WINNING STAR LETTER

## Biometric future

Computer-related developments are rushing ahead full steam. Many of these developments revolve around user transactions of some kind, be they internal to an organisation, between organisations or between organisations and their customers. One aspect of this that deserves our attention is security, both of data and of user authentication. With regard to the latter, we are on the threshold of some particularly exciting developments. Biometrics (the use of a physiological and/or behavioural characteristic in order to verify user identity — such as

fingerprints, iris scanning, voice verification and so on) has been around in the commercial sense for well over a decade and yet seems to have been slow to find its way to the desktop.

The recently announced collaboration between Microsoft and I/O Software to incorporate biometric functionality into future editions of Windows, coupled to the now much lower costs of the devices themselves will, undoubtedly, raise awareness of what can be achieved in this context.

The current crop of biometric devices, especially from companies such as Sony and Veridicom, also demonstrates

that these are well-designed, mature peripherals.

From the user perspective, the ability to log on to services, open applications and even secure folders via the use of a simple biometric transaction must surely be attractive, especially when compared to the plethora of passwords many of us are required to remember and manage.

When application developers start embracing this idea with a vengeance, no doubt we shall see a somewhat different security model developing. Who says tomorrow never comes!

**Julian Ashbourn, via e-mail**

## → WIN A 19-inch TAXAN MONITOR!

Each month we are offering a fantastic 19-inch Taxan Ergovision 975 TCO 99 monitor worth £309 to the Letter of the Month. Perfectly flat from edge to edge, this superb high-resolution monitor with DIAMONDTRON Natural Flat (NF) screen represents a significant advance in display technology, offering accurate, pixel-perfect image reproduction. The Ergovision 975 TCO 99 comes complete with built-in USB hub and meets the TCO 99 environmental labelling standards. For the complete range of Taxan monitors, call 01344 484646 or visit the Web site at [www.taxan.co.uk](http://www.taxan.co.uk)



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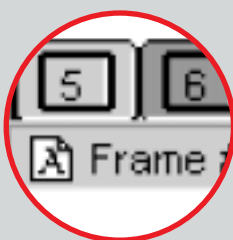
## ➔ Motion tools up close

Here's how to navigate your animation frames and set playback timing



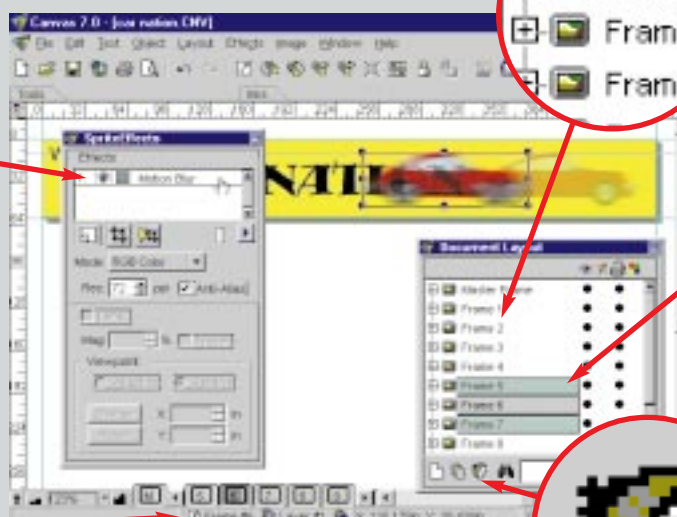
### SPRITE EFFECTS

Canvas lets you apply photo filter effects to live vector objects. What better for an animation than a motion blur?



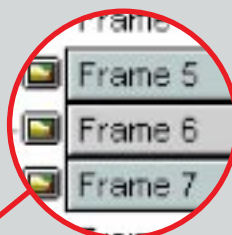
### FRAME THUMBNAI

Scroll through your animation without using the Document Layout palette by clicking on these frame thumbnails, just like you find in certain desktop publishing programs.



### DOCUMENT LAYOUT PALETTE

Click through and re-order the frames here, or click on a plus sign to expand the nested layers and objects in that frame.



### FRAME TIMING

Double-click on a frame to open its timing options. The little number at the bottom left next to the stopwatch icon represents hundredths of a second.



### ONION SKINNING

This feature displays ghost images of the previous and next frames as well as the current one. Click on the half-onion button and select from a pop-up menu of choices.

## Graphics Masterclass:PART TWO

# Animate for the Web with Canvas

**Alistair Dabbs** puts Deneba Canvas 7 in the frame as an unexpectedly powerful GIF animator

**Y**ou may be familiar with the product names CorelDRAW, Illustrator, FreeHand and Photoshop, but any reference to Canvas leaves most people none the wiser. If I said it was a graphics package which combined vector illustration and photo-editing in one place, or even uttered the term 'SpriteLayer', it might possibly jog your memory. But the biggest secret about Canvas 7, the latest release from Deneba, is

that it's rather good at creating animated GIFs.

Usually you need a dedicated package for producing Web animations, such as Adobe ImageReady (part of Photoshop 5.5) or Macromedia Fireworks 3, or the likes of LiveMotion, Flash or even After Effects for the ultimate overkill. At the other extreme, you can painstakingly build up individual animation frames in any old paint package and combine them afterwards with a

shareware utility such as the GIF Construction Set.

But using Canvas 7 is better than all of them in one important respect: you can work with vectors. This means your characters and graphical elements are 100 per cent editable at all times so it's simple to move things around, recolour objects, and resize and reshape them to your heart's content. Try doing that in Fireworks.

In fact, try doing it in Illustrator or FreeHand: both products can now export to Flash format, but neither can generate anything so fundamental and valuable as an animated GIF.

The key to understanding the Canvas approach to animation is its Document Layout palette, which shows frames (document pages) and layers as nested hierarchies. Just build your animation steps in one place first and send them to individual frames afterwards, and only start delving into layers to edit each frame's contents when necessary. Get hold of a copy of Canvas and try this workthrough. I think you'll be surprised. **PCP**



**Alistair Dabbs**

adabbs@pcpmag.co.uk

**PCPlus**

**NEXT MONTH**

Tackle colour shifts and red-eye the smart way with Paint Shop Pro

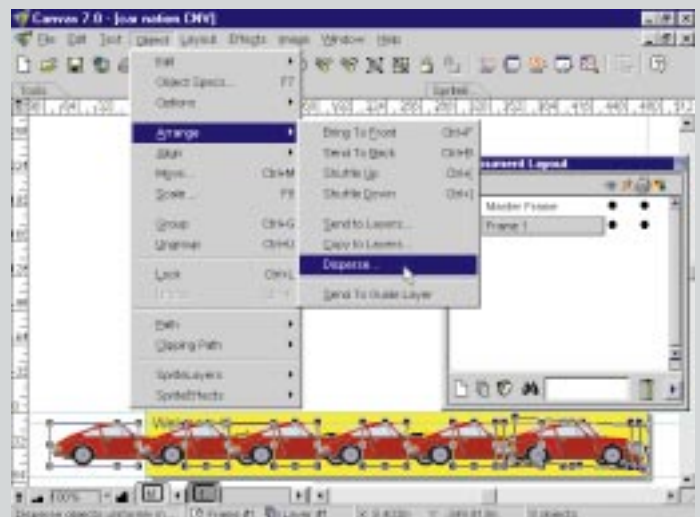


## Create a Web ad banner

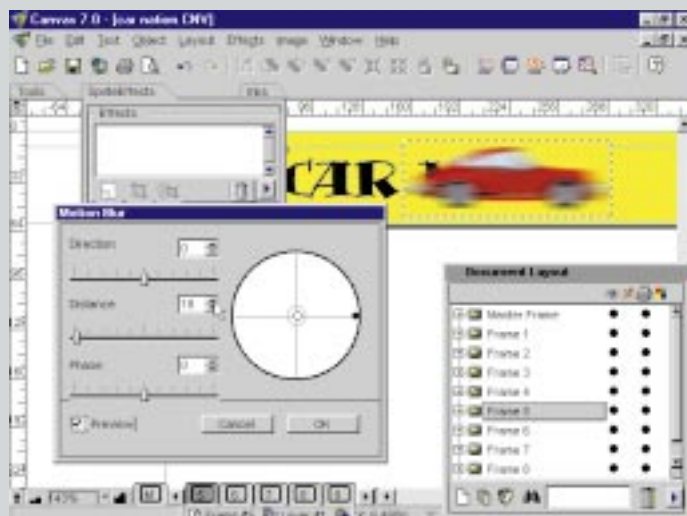
Building animated GIFs is easy with Canvas' vector tools



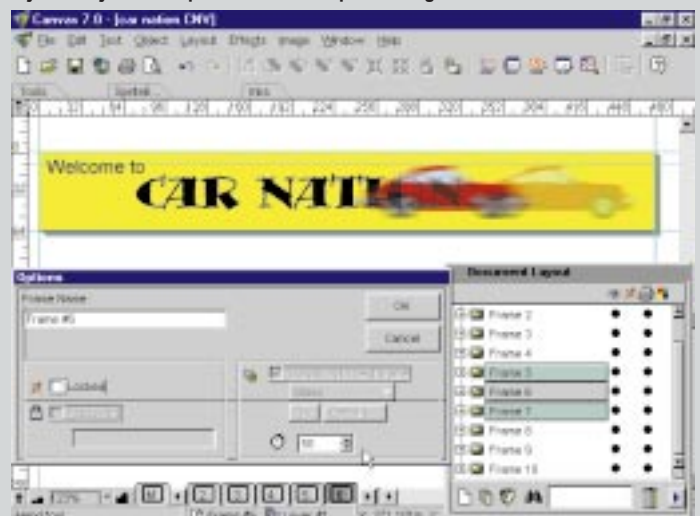
**1** Select New from the File menu and choose to create an Animation using the Full Banner document size from the New Document dialog. Open the Document Layout palette from the Window > Palettes menu, click on Master Frames and use a coloured rectangle to fill the document area. Click back on Frame 1, type in your text and locate this car (TR045.CNV) from Canvas' clip-art CD 3. Flip it horizontally using the Flip command in the Effects menu.



**2** Resize the car (drag on a corner handle while holding down the Shift key) and position it on the left. Type Ctrl-D to duplicate it and shunt it slightly to the right. Repeat several times so the final car is at the right of the banner. Shift click them all and choose Arrange > Disperse... from the Object menu. This command is also available from a right-click pop-up menu. Leave 'Objects per partition' set to 1 and select 'Dynamically allocated partitions in the Disperse dialog window.



**3** Each car is automatically sent to its own unique frame, these new frames being created on the fly. Back in Frame 1, select the text and use the Arrange > Copy to layers... command to put a copy of the text into frames 2 onwards. I went further by converting the text to objects (Object > Path > Convert to Paths) and splitting up the letters before copying to the other layers, then applied a motion blur SpriteEffect to each of the cars.



**4** Turn on onion-skinning by clicking on the half-onion button at the bottom of the Document Layout palette, choosing Next & Previous Frame from the pop-up menu. Double-click on Frame 1 in the palette to call up its Options dialog. Change the timing if necessary next to the stopwatch icon and click OK. Repeat for all the other frames. You can come back and change these timings later, of course.



**5** You can add more frames as you like, remembering to use the Arrange > Copy to layers... command to copy over objects from previous frames. Finally, choose Save As... from the File menu and select GIF Animated from the Save As Type pop-up list. Make your last-minute choices in the options dialog which appears and click OK. View your animation in a Web browser, then return to Canvas to fine-tune and resave it.



# Getting started with Linux

# File sharing with Windows using Samba



Want to share files when your network includes both Windows and Linux-based machines? Of course you do. **Maurice Kelly** shows how

**W**ith the simultaneous reduction in the price of both computers and networking hardware, increasing numbers of homes and small businesses are getting networked. In recent columns we explained how to network your PCs and use file-sharing facilities built into Windows. But what if one of your machines is Windows-based and the other runs Linux? Maybe you want to use your Linux server as a filestore for the rest of your network.

What you need is Samba, a UNIX implementation of the SMB networking protocols that Windows uses for file-sharing. Samba was created in 1991 by Andrew Tridgell (who now leads the Samba development team) and is one of the most successful open source projects around. With Samba, you can set up 'shares' on your Linux box that can be read through the Network Neighbourhood in Windows. It is not limited to file sharing alone – it also makes for a very flexible print server that can be used to share a printer with Windows machines.

Most Linux distributions come with a Samba package, but it isn't necessarily included on a default installation. Check your system for Samba (using your package management tools) and, if it's not there, install it from your distribution CD. If Samba doesn't start automatically, next time you reboot you will need to edit your runlevels. You can use a graphical

program such as 'ksysv' or 'tksysv' to do this under X. Another method for Red Hat-based systems is to use the 'chkconfig' utility – issuing the command 'chkconfig –level 35 smb on' should be sufficient.

Because Samba is such a flexible suite of tools, configuration can be a daunting task. To make it that little bit easier, there are utilities available that allow configuration through some form of user interface. Recent versions of Samba include Samba Web Administration Tool (SWAT), a useful tool that serves up HTML pages to your Web browser, enabling you to configure them from anywhere on your network.

If you are not confident about this sort of thing then you may wish to use SWAT to start and stop your Samba daemons manually, but it is worth taking the time to learn how to manage system daemons. Depending on your distribution, SWAT may need to be set up. Log in as root and, in your editor of choice, open /etc/services and look for the following line:

```
swat 901/tcp
```

If you can't find this line, add it; if you can find it and it has been commented out (with a '#' at the beginning of the line), un-comment it. Next point your editor towards the file /etc/inetd.conf and look for the following line:

```
swat stream tcp nowait
.400 root /usr/sbin/
swat swat
```

If you don't see this line, add it. Again, if you find it and it is commented out, un-comment it. If your copy of SWAT doesn't actually live at /usr/sbin/swat, you need to replace that text with its actual location. To enable SWAT, we must restart inetd so that it knows about our re-configuration. On our Red Hat system we issued the commands:

```
$ /etc/rc.d/init.d/
inet stop
$ /etc/rc.d/init.d/
inet start
```

Your own distribution may vary, so check your manual for details on restarting system daemons.

## Configuring Samba

We're now ready to start using SWAT. Open up your Web browser and point it to your machine using port 901. Our machine has the address 10.0.0.2 so we can open Netscape and type in http://10.0.0.2:901/. If you're on the machine running SWAT you



**PATH:** /linux

can use http://127.0.0.1:901/ or http://localhost:901/. Once you've connected, you should be greeted with an authentication prompt at which you should log in as the root user. If not, look back over the previous configuration details and check they are correct.

Conveniently, SWAT comes with a nice bundle of online documentation – on itself and Samba. This opens in a new browser window so that you can read it while you're using the tool. A row of icons along the top are your main options. Our first port of call is the Globals section, so click on it and have a look at the options available. If you look at the left-hand side of the options list you'll see a row of help links – these will link directly to the appropriate section of the smb.conf manual page brought up in the help browser window. If you're having problems, this is a good

## → Encrypted passwords

### Having access problems?

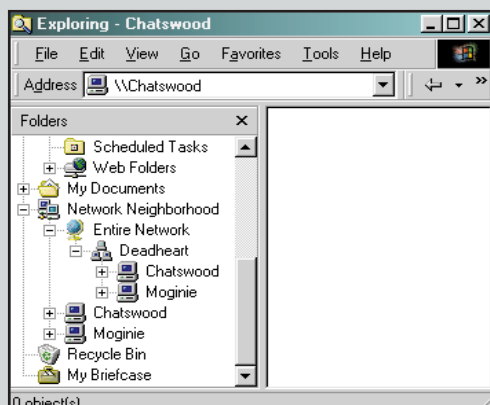
You may have problems accessing a Samba share when you connect from Win95/OSR2/98/NT/2000 because these versions will try to communicate with Samba using encrypted passwords. Samba can handle encrypted passwords, but you'll have to set the 'encrypt passwords' option in the Globals section to yes.

If you have a mix of machines – some sending encrypted passwords; others sending plaintext – then you need to decide between upgrading all your older machines to use encryption, or turning off encryption on the newer machines. Registry keys are provided with Samba for performing the latter. Read the docs in /usr/doc/samba-2.0.x/docs/textdocs/ – ENCRYPTION.txt, WinNT.txt and Win95.txt are helpful. The registry keys are found in the directory above these files, but take care to back up your registry before you perform any operations on it!



## → Creating a share

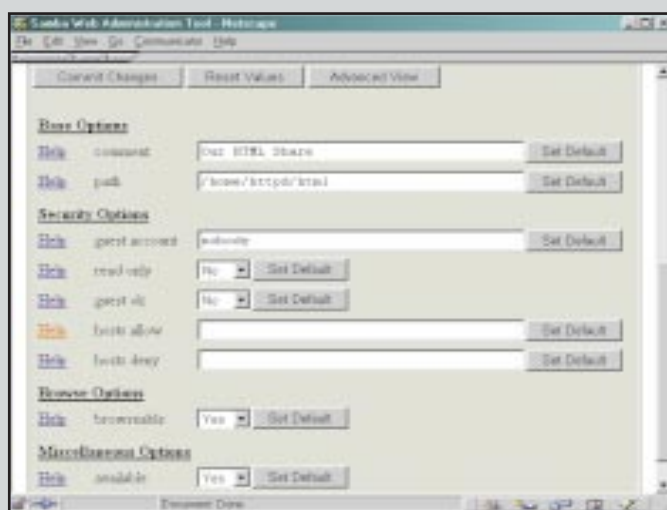
It's all very well running Samba on your machine but you need to create some shares. Here's how:



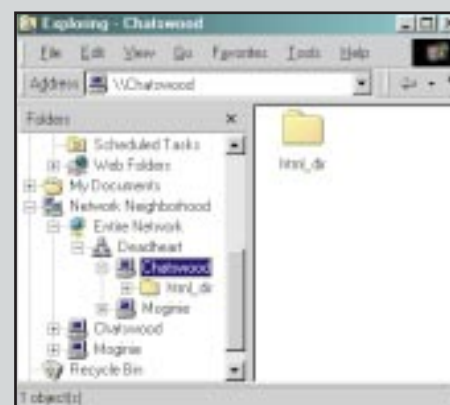
**1** After connecting, we see that there are no shares available to browse – your distro may have set up some default shares but we'll create our own. Our share is intended to make available the Apache HTML directory on the machine 'chatswood' so that our Windows users can modify the local Web site directly without having to manage a local copy.



**2** Open the shares section of SWAT and you will see space to enter a new share name. This is what you see as a 'directory' in Network Neighbourhood. Choose something that represents the contents meaningfully – we called ours 'html\_dir'. Once you've chosen a name, click the Create Share button. You can also create a special share known as 'homes' which will present each user with their own home directory when they view a Samba server on the network.



**3** This opens the 'Share parameters' form for you to more precisely define the share. The most important parameter here is the path – this defines the directory whose contents will be shared. Note that no path is required for the homes share mentioned in step 2. For our HTML share we've chosen /home/httpd/html because this is where our HTML documents are stored. Make sure you choose a directory that is available for at least read access on the Linux box, otherwise Samba won't be able to read the contents to offer them through the share! The other option we set was read only to No – this enables us to write to the share. When you've defined your share, click Commit Changes.



**4** Once the changes are committed, open the Status page in SWAT and restart Samba as you did earlier. Go back to Windows Explorer and refresh the display – all being well you should see your newly created share and be able to delve into its contents.



[www.pcplus.co.uk/forums/linux](http://www.pcplus.co.uk/forums/linux)

place to check for solutions. We'll get stuck into the setup by getting the bare minimum ready so that Windows can see the Samba server on the network.

Select the Globals screen and note the workgroup field. For most purposes this should be the same as the workgroup your Windows PCs are in. You can find this out by opening the Windows Control Panel, selecting Network and then viewing the Identification tab. Fill in this field with the appropriate workgroup name. Now you have the option to set your machine's netbios name – by default, it assumes the machine name. In our case it assumed CHATSWOOD, its DNS name. If your machine is just called localhost then specify a descriptive name here that will be seen in the Network Neighbourhood – for example, SAMBA. The server string field is displayed when you right-click on a Samba server and

select Properties. You can set this to anything you like, but make it descriptive if you have other users on your network.

The interfaces section can be important – on our machine it made the difference between being seen and being invisible to the Network Neighbourhood. It tells Samba which network interfaces to serve on – it is supposed to find an interface if nothing is specified but, as we said before, it doesn't always. Our Ethernet IP was 10.0.0.2 so, for this option, we used the string 10.0.0.2/255.0.0.0 – you should insert your own IP address and appropriate netmask. Once your configuration options have been set, press the Commit Changes button.

You are now ready to fire up Samba for the first time – select the Status page and look down to the section where you are informed if Samba is running. Samba consists

of two daemons: smbd and nmbd. Press the Start button for both of these (or if they are already running you should restart them instead) so that the server is running and is available to the network. Now open Windows Explorer and navigate to your Network Neighbourhood. Open your workgroup and look for the Samba server name. If you can see it, then you're close to using your file-server.

### Getting in

Open the machine in the Network Neighbourhood and you should be prompted for a password. You need to be logged into your Windows machine with the same username that you use on the Linux box. If not, log off from Windows and log in with your Linux username. Now enter your Linux password and you should be allowed in. If you have problems with your password not being accepted – see **Encrypted passwords**, opposite. Otherwise the list of available shares will be displayed – what

you see will depend on your distribution's Samba setup (many will display your home directory). Whether you see some default shares or nothing at all, it's now time to create our own using the Shares section of SWAT by following the steps specified above.

Samba is a powerful tool and configurations can range from the simple, to exceedingly complicated. If you need to alter a working Samba configuration at some stage, we recommend that you take a backup of the file 'smb.conf' so that you can replace it if it somehow gets broken! **PCP**



**Maurice Kelly**  
mkelly@pcpmag.co.uk

**PCPlus**  
**NEXT MONTH**  
Setting up Apache and  
building your first  
Web site



## MySQL and PHP: PART ONE

# Getting started with MySQL



**Dave Coulson** begins  
by using MySQL  
as a database for  
a Web site

**W**ith the multitude of database servers available, from PostgreSQL or mSQL, right up

to Oracle, people sometimes wonder why MySQL is so popular, even though it used to have a fairly restrictive license and doesn't support many of the more complicated SQL operations which most people are used to. Well, simply because it's fast. The license isn't that much of a bother as it is now under the GPL. The latter is what we're going to be heading for, but we need



**PATH:** /linux

to get MySQL up-and-running before we can start to play with it. **PCP**



**Dave Coulson**  
dcoulson@pcpmag.co.uk



**NEXT MONTH**  
Making SQL calls  
to MySQL



↑ You can see MySQL all over the Web. Our sister magazine, Linux Format ([www.linuxformat.co.uk](http://www.linuxformat.co.uk)), uses MySQL coupled with PHP to power their database driven Web site.

## → How to begin

There are two different versions of MySQL available: the stable 3.22 or the development 3.23 release

Although it's officially in development, 3.23 is perfectly stable for the more standard features and has a few extra ones which you might find useful. Point your favourite ftp client at <ftp://ftp.mysql.com/pub/mysql/> and download the latest release which, at the time of writing, is `mysql-3.23.18-alpha.tar.gz`. We have included this on the **SuperDisc**. We're going to be using the source distribution, so there's a bit more control over what we can do with it. If you've already got an RPM installation of it, it might be worth removing it if you're not familiar with running parallel libraries on a single machine. Make sure you get the basic `.tar.gz` and not a binary release for AIX or similar. Once you've downloaded the file – which is around 6.3MB in size – untar it and copy the `.tar.gz` somewhere safe just in case you need it later. Compilation and installation is via the usual `configure` and `make` method, but we need to pass a few options to our configuration script:

```
cd mysql-3.23.18-alpha
./configure - prefix=/usr/local/mysql
-with-unix-socket- path=/tmp/mysql.lock -without
-debug -enable-large-files -enable-assembler
-enable-thread-safe-client -with-pthread -with
-mysqld- user=mysql
```

While most of these are just optimisations and thread settings which you'll probably forget about once it's up-and-running, there are three options which are quite important when it comes to running or using MySQL later.

### The first option

The first is the `'-prefix'` option, which we use to force MySQL to install into a `/usr/local/mysql` directory. By default, MySQL will install into `/usr/local`, so the `'mysql'` client will be in `/usr/local/bin` and the daemon in `/usr/local/sbin`, which isn't really ideal if you want to get rid of it quickly. Using our method, it will install the client in `/usr/local/mysql/bin`, the libs in `/usr/local/mysql/lib` and so on, which keeps it all separate from the rest of the system. If you are so inclined, you can install it into `/usr/local/mysql-3.23.18`, then symlink that to `/usr/local/mysql`, so you could switch between two different versions without reinstalling anything.

### The second option

This isn't one which you will come across when installing the majority of programs because it's purely for any server/client system. `'-with-unix-socket-path'` sets the position in the filesystem for the UNIX domain socket. This is used to transfer data, much like a TCP connection, but only on the local system. As you might expect, this is far less resource-hungry than using the loopback interface, but the client has to know where the server has put the socket file.

### The third option

This is probably the most important if your network is `'-with-mysqld-user'`. This specifies which user you want the MySQL daemon to run as when it launches. You would usually run `mysqld` via an `init.d` script, which is executed as root, but it's not always a good idea running services as root in case they can be used to gain further access to the machine – as the Apache group found out. You'll have to use `'useradd'` or `edit /etc/passwd` to create a `'mysql'` user before you install MySQL.

Once `'configure'` has finished, you can then do `'make'` and wait a while for it to compile. MySQL is by no means a small set of programs, so it could take a while to compile. After it's finished, a `'make install'` as root will finish the job. As we've installed it in `/usr/local/mysql`, you'll need to add `'/usr/local/mysql/lib/mysql'` to `/etc/ld.so.conf`, then run `'ldconfig'`, so the system knows where the libraries are.

Once installed, running the `mysql` server is done using the command `'safe_mysqld'`, which you'll have to do as root. It should say, "Starting `mysqld` daemon with databases from `/usr/local/mysql/var`," then it's ready to go.

### Authentication and privileges

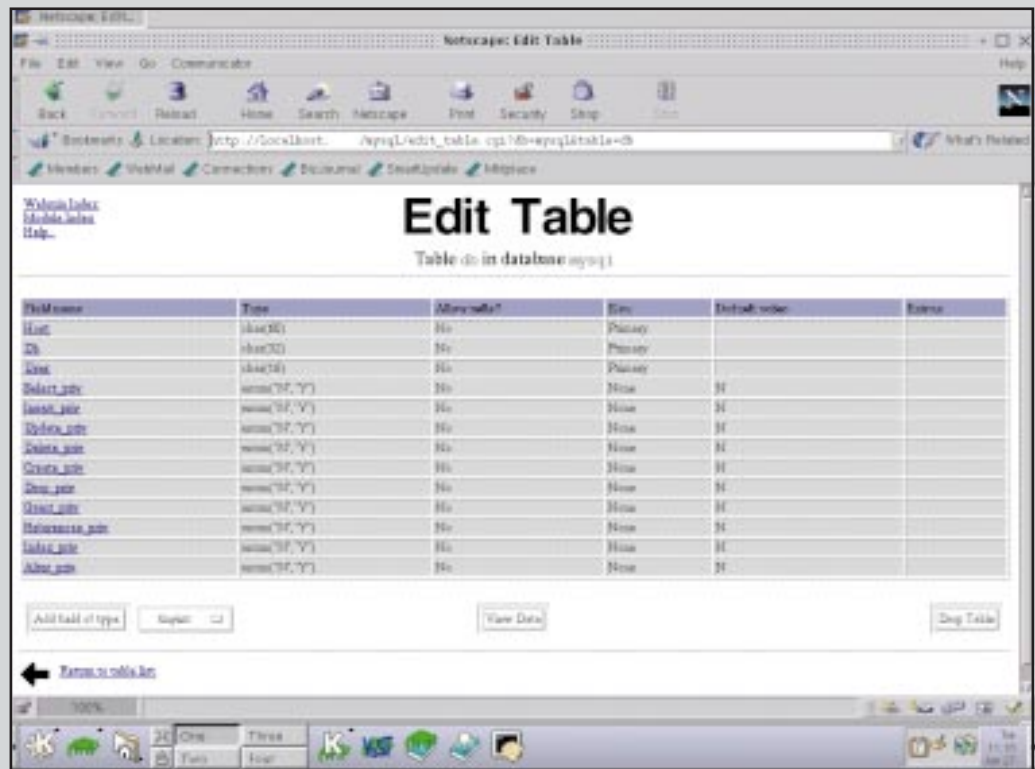
When you first install MySQL, it has no security settings, so anyone can just come along and connect to your server, which isn't really ideal. You can set the `'root'` password for MySQL with the command:

```
mysqladmin password "secretword"
```

The first thing to remember is that the MySQL user `'root'` has nothing to do with the Linux root user. You can connect to `mysql` via any Linux user you like, as long as you know a username and password to connect to MySQL with. The MySQL root user is just a default user which has all of their privileges enabled, so they can do anything to any database.

We can connect to our `mysql` server with the `'mysql'` client. Although it's text-based, it is really easy-to-use because it just sits there and waits for you to enter a SQL query, then spits out the results in a table:

```
mysql -hlocalhost -uroot -psecretword
```



## Simple SQL queries

```
SELECT * FROM user;
```

```
SELECT User, Password, Host FROM user;
```

You might think that '1270.0.1' and 'localhost' are the same thing which, from a purely IP point of view, they are but in mysql, '1270.0.1' means 'local connection via IP' and 'localhost' means 'local connection via socket'. You might also notice a couple of '%' characters, instead of a hostname. A '%' in MySQL is much like '\*' in the shell, matching 0 or more characters. '%' only matches IP connections, so if you just have '%' in the Host column, it will let anyone connect via IP using that particular User/Password combination but, unless there is another row for 'localhost' with the same User/Password, they won't be able to connect using sockets. It can become quite confusing because you can have multiple rows for the same User, with different passwords from different hosts, but it'll still be the same user within MySQL.

```
INSERT INTO user (User, Password, Host) VALUES
('Web', PASSWORD('WebApp'),'localhost');
```

```
SELECT * FROM user WHERE User="Web";
```

```
MySQLadmin -uroot -psecretword reload
```

```
CREATE DATABASE web;
```

```
GRANT ALL PRIVILEGES ON web.* TO 'Web';
```

```
INSERT INTO db VALUES("localhost","web","Web","Y",
"Y","Y","Y","Y","Y","Y","Y","Y","Y");
```

```
mysql -uWeb -pWebApp web
```

Next month, we'll find out how to use MySQL via PHP.







# Your Linux questions answered

**David Coulson** fixes a stern gaze on your Linux box and tackles the latest set of Linux problems

## Mandrake problems

**Q** I have Mandrake 7.0 Linux installed on my Dell Latitude laptop and I find it the best distribution out of three I have tried (the others are Corel and Redhat 6.2).

Mandrake does a good job of finding hardware including a PCMCIA Ethernet card, and it copes well with changes of PCMCIA cards and media bay add-ins – with one exception: If I don't have the floppy drive attached either in the media bay or on the cable attached to the parallel port, Mandrake Linux boots and works fine. But at close down it stops dead at the point where it tries to close down the floppy.

**Adam Blacklock, via e-mail**

**A** There should be no reason for Mandrake to 'shut down the floppy' because the media bay has the whole fdc (floppy disc controller) on it, as well as the physical drive. You can't even try to mount /dev/fd0 because the kernel hasn't got a clue what it is, so it doesn't seem logical that you'd encounter any problems when trying to unmount the drive.

Without any more details – such as what's trying to shut down the floppy drive, or how it's trying to shut it down – there's not a lot you can do. However, do remember that you can't swap out the floppy drive or CD-ROM drive without rebooting the system because the whole machine gets rather confused.



↑ Get Windows off that laptop! There are a number of Linux solutions for the mobile penguin pal.

## Hostnames

**Q** When I run KPP under KDE and it connects to the Internet successfully, I cannot start any program. With Netscape, for example, I have to start the program first then start KPPP to do my surfing. Is there any explanation for this?

**Thomas Hawkins, Edinburgh**

**A** KPPP has an option 'Auto-Configure hostname from IP' which changes

your machine's hostname when you connect to the Internet. While this might be useful, it causes a mountain of problems with X because any new programs will try to connect to 'hostname.isp.net:0', rather than 'localhost:0'. Having been started under the hostname 'localhost' (or whatever you call your machine), X will promptly have a good whine as it rejects your authentication. Just deselect this option and everything should work as normal.

## X server

**Q** I was editing a config file to try and get my Intellimouse working. I then logged out, chose Shutdown and Restart X server. Now, every time I reboot I get a text login. I've logged in as root and typed 'startx' but I get a message to say that X server is already running. **Alastair Petrie, via e-mail**

**A** Using 'ps ax', start by checking that there isn't an X server running already. If there is, you can use 'Ctrl-Alt-F7' to switch to the X server. The fact that it doesn't switch to the X server when you boot up probably indicates that it's not running, so we have a different problem altogether.

You could start by checking to see if /tmp/.X0-lock or /tmp/.X11-unix/X0 exist. Those are UNIX domain sockets, so local applications can use the X server without having to use TCP/IP connections, which are a lot slower than sockets. If they do exist, delete them, then try 'startx' again. Hopefully the X server should start up without any problems.

Check your distribution's configuration tool or in /etc/inittab that your machine boots into a graphical run level. On RedHat and its variants, it's 5: in others it can be 3 or 4. I'd imagine you've unwittingly done something else to damage your configuration when you changed the mouse definition in XF86Config. If in doubt, restore /etc/X11/XF86Config from the backup. You did make a backup, didn't you?



## Kernel modules

**Q** Is there a quick way of determining which modules are compiled into a kernel? An output which can be compared to the configuration screens of "make config"/"make xconfig" would be ideal.  
K Winton, via e-mail

**A** Unfortunately, there is nothing quite that simple. You can get a list of all available kernel modules with 'depmod -av' but unless you know which module applies to which kernel option, it won't help much. However, if you want to know what a specific module does, you can search for its name using a text editor in /usr/src/linux/Documentation/Configure.help. You can also find out which kernel options are compiled as modules by using 'grep'ing for '=m' in /usr/src/linux/.config but, again, you'll have to search for its name in Configure.help.

## Bash script

**Q** I am trying to write a bash script to start my IRCd and Services for it at boot time. I just about got as far as #!/bin/bash.

I need it to change user to dave, then execute /home/dave/irc/ircd and /home/dave/irc/services/services. Is there a really easy way to do this?

Dave Hemmings, via e-mail

**A** As boot time scripts are executed as root, it's simply a matter of using 'su' to change the user to 'dave', then execute the programs:

```
#!/bin/bash
su - dave -c /home/
dave/irc/ircd
su - dave -c /home/dave/
irc/services/services
```

The '-' after 'su' simply creates an entirely new session, rather than just changing the uid of the current session to the uid of 'dave'.

## Linux LAN

**Q** Does anyone have step-by-step instructions on setting up a Linux LAN where home dirs and passwd files for all users are stored centrally? Also, could I have /usr on a server and mount this at boot time or log-on?

Basically I need a network where any user can log into any machine and have their own

environment. I also need a way to cut down on the work involved in maintaining software packages on a number of machines (hence the idea to put /usr on the server). I am not sure how this affects X Windows – for example, what about different machine specs?  
From pcplus.linux

**A** Having a centralised password server is fairly straightforward to set up using 'yp', or NIS. There's documentation available on this at [linux.com/howtos/](http://linux.com/howtos/), but do make sure you have the most up-to-date releases of the server and client – just in case there are any security issues with older builds.

Sharing /home over a network is no trouble, aside from the fairly infamous instabilities of NFS. User IDs will be handled without problems because the workstations will get these from the NIS server, so 'bob' will have the same UID on all systems. There will be a performance drop if many users are using the NFS server at once, so you might want to consider putting the NFS server and workstations on a fast switch.

Sharing /usr probably isn't particularly clever, as you'll get huge performance drops when everyone logs on and starts Netscape, or even during booting machines that run X or the various servers which are available on them. If you want to try to keep /usr up-to-date, you could set up a /source NFS mount on all the machines, then just run 'make install' within a particular source directory on each machine or the same 'rpm -Uvh \*.rpm' command.

Configuration files shouldn't be a problem because they'll be stored in /etc, which won't be shared over NFS. If you share /usr, you might have problems with the '/usr/X11R6/bin/X' symlink not pointing to the right X server, but you could either use XFree86 4.0 or install XFree86 somewhere else out of the /usr tree. **PCP**



Dave Coulson  
dcoulson.pcpmag.co.uk

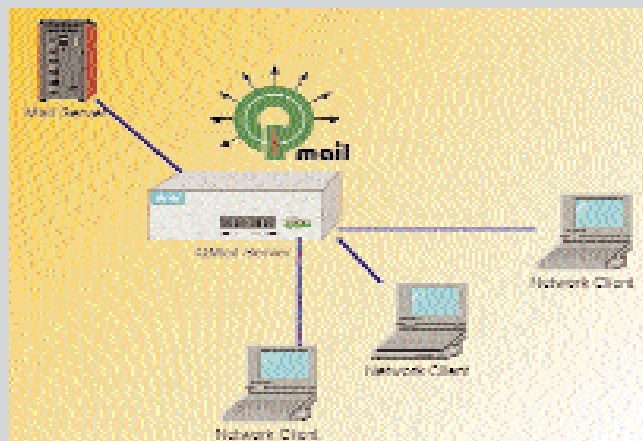
## We can help!

→ Got a Linux problem? We can't answer questions privately but we're pleased to answer your questions through these pages.

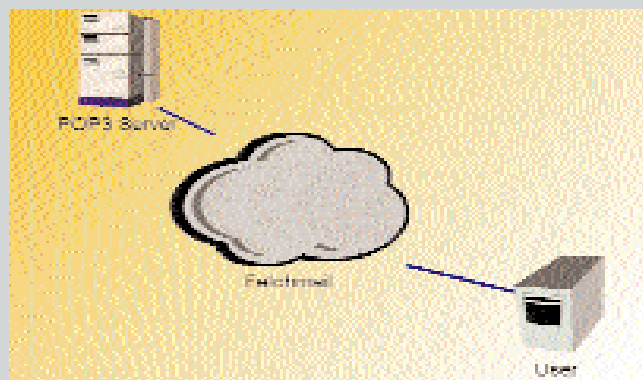
→ E-mail your questions to: Linux Q&A at [dcoulson@pcpmag.co.uk](mailto:dcoulson@pcpmag.co.uk) and we'll try to help. Alternatively, send them to Linux Q&A, PC Plus, 30 Monmouth Street, Bath BA2 3BW.

## → Remote mail fetching and local distribution

Follow these three easy steps...



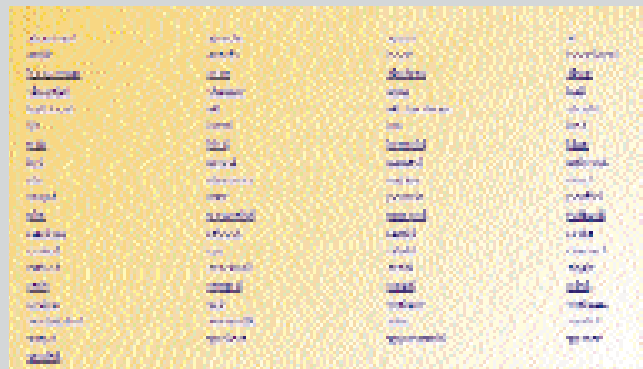
**1** Qmail [www.qmail.org](http://www.qmail.org) is a good option for the novice because it has simple configuration files and there is excellent documentation offered on the Internet. If you want to fetch mail from an ISP for a domain, 'domain.co.uk', and resend it locally, you first need to make your mail server accept mail for '\*@domain.co.uk'. In qmail this is configured in the rcpthosts and locals files, so just add 'domain.co.uk' to the list (one domain per line), and restart qmail.



**2** Fetching mail is easily done using 'fetchmail' ([www.tuxedo.org/~esr/](http://www.tuxedo.org/~esr/)). All you need is a line similar to:

```
poll pop3.isp.net proto pop3 localdomains
domain.co.uk: username domain password dompass
to * here
```

which fetches mail from pop3.isp.net, which you will need to change, via pop3. The 'localdomains domain.co.uk:' section causes fetchmail to resend anything under domain.co.uk through your local mail server without any header modification so, as far as qmail is concerned, the mail is heading for 'originaluser@domain.co.uk', or similar.



**3** Run 'fetchmail -d300' at boot time or you can run it on a cronjob. Just remember to put the polling line in the .fetchmailrc of the user who will actually be running fetchmail or nothing will happen. You might also want to read up on the qmail documentation as to how to set it up so e-mail sent to non-existent users on your system will be sent to the administrator, or someone who knows what to do with it, rather than just bouncing.

## → Getting started with the Outline View

Your document in Outline view will look quite different to other Word views – here is what the key symbols and buttons mean

**1 OUTLINING TOOLBAR.** All the buttons specific to outlining are displayed on this toolbar which appears whenever Outlining view is chosen.

**2 EXPAND AND COLLAPSE buttons** are used to expand or collapse items in outline view.

**3 SHOWING HEADING LEVEL BUTTONS.** Each numbered button will, when selected, display that heading level and all others above it.

**4 LEVEL 2 HEADINGS.** Each of these level 2 headings appears directly below a level 1 heading. There may be none or any number of level 2 headings below a level 1 heading.

**5 THE DOCUMENT TITLE** has been formatted using the Title style, it is at a level above Outline heading level 1.

**6 LEVEL 1 HEADINGS.** Each of these headings are at the top heading level of the document hierarchy.

**7 LEVEL 2 HEADING.** The plus symbol to the left of this level 2 heading indicates that it has other headings or body text below it in the hierarchy.

**8 LEVEL 2 HEADING.** The minus symbol to the left of this level 2 heading indicates that it has no other headings and/or body text below it in the hierarchy.

The screenshot shows a document titled "Hard Disc Back-Up" with the following structure:

- Hard Disc Back-Up
  - 1 Media Options
  - 2 Software Options
    - 2.1 Software supplied with the hardware
    - 2.2 Third party solutions
  - 3 How to do it
    - 3.1 Who should do it
      - Allocate one person to be responsible for the task.
    - 3.2 How to do it
      - 3.2.1 Frequency
        - The frequency that you back up your disc will depend on what lose.
      - 3.2.2 Timing
        - Make a routine of it and do it at the same time every day.
      - 3.2.3 Verification

## OUTLINING FEATURES: PART EIGHT

# How to utilise Office Outlining



Outlines are powerful tools for managing complex data.

**Helen Bradley** outlines the features in Word, Excel and PowerPoint

**O**utlining is a feature of Microsoft Word and most other word processing software, but it has also been incorporated into Excel and PowerPoint. Outlining involves attributing levels of importance to individual pieces of data (usually text) and then using these levels to display or hide data. This makes complex documents easier to work with and imposes a useful structure on the design of the document or presentation.

In Word, Outlining is used to develop long documents. You can use Outline view to create a document from the top downwards – you type your title and the main headings for the document then you expand each main heading by adding some sub-headings underneath it. When you have two or three levels of sub-headings below your main heading, you're ready to finally flesh out the document by typing the information which will appear under each



heading – called body text.

Creating documents from the top down like this is a very efficient process. You have the ability to look at the entire task ahead of you and to break it up into smaller and smaller (and increasingly more manageable) pieces. Additionally, you can easily hand out pieces of the heading hierarchy to other people to work on.

In PowerPoint, Outlining is used as the design structure for slides. Each main heading in the slide Outline is a slide title and each subsequently lower level heading is text on the slide.

In Excel, the Outlining features are useful for viewing data. You can group columns and rows of data together and temporarily 'hide' them from sight leaving only the totals of these columns visible. Alternately, you can take a total figure and successively expand the Outline to see the data that contributed to it.

This month we'll look at how you can quickly and easily organise and reorganise your documents using Word's Outline options. These commands will, in general, work just as well with Word 97 and other Office 97 applications as they do with the Office 2000 applications we're using.

### An Outline view

To view a document in Outline view, choose View, Outline and to exit Outline view, choose View and then select one of the other view options such as Normal or Print Layout. When you switch to Outline view you'll see a hierarchical view of your document showing its highest level headings right down to the lowest level headings and the body text which appears below these.

When you are in Outline view you can collapse parts of the document's structure. For example, you may display only first level headings or you may display all headings but hide the body text.

In addition, you can expand and collapse small portions of your document Outline. You may be working on a document in which only first and second level headings are displayed. You can then choose to display the body text level for only the heading you are working on. By hiding all the text except the portion you are working on you can clear the screen of extraneous material and focus on the task in hand.

### Another reason to use Styles

If you use Styles to format the text and headings in your documents then you'll appreciate how easy it is



[www.pcplus.co.uk/forums/windows](http://www.pcplus.co.uk/forums/windows)

to create an Outline from any existing Word document. If you're not in the habit of using styles then it is a good one to begin developing.

If you use Word's inbuilt heading styles (Heading 1, Heading 2... and so on) to format your document, Word will already have an Outline prepared for it. You can see this by opening a document containing text formatted with styles and choose View, Outline. Your editing screen will then display the document in Outline view with extra symbols showing down the left of the page opposite each paragraph.

These symbols indicate the level of each paragraph in your document. While you can have up to nine levels in a document (corresponding to Word's nine heading levels — Heading 1... Heading 9) you'll find that, for most uses, 2-4 levels are quite sufficient.

### Making sense of the symbols

The plus symbol next to a paragraph, indicates that the paragraph has text following it at a lower level. This may include text formatted with a Style that Word doesn't recognise as a specific Outline level. The minus symbol indicates that the paragraph has no text following it at a lower level. A paragraph with a small square beside it is text at the 'body text' level of the document – this is

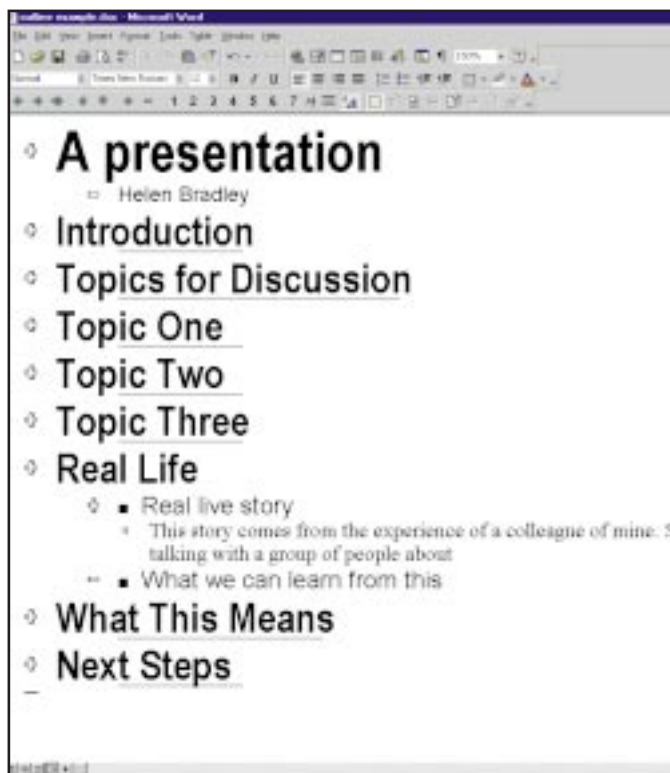
generally text formatted with the (default) Normal style.

If you've opened an existing document in Outline view you'll notice that much of the formatting such as paragraph spacing and indenting will have disappeared. In addition you'll notice that Word has applied indenting to the paragraphs to show you the different levels in your document. Don't panic, the actual formatting of your document is unaltered.

### The Outline toolbar

The Outline toolbar appears whenever you're in Outline view and it contains buttons to display your document in different ways. The buttons numbered 1 to 7 enable you to expand or collapse your document so you view only some of the headings. For example, if you select 1, you'll see only first level headings; if you select 3, you'll see the top three levels and so on. You can display all the document by clicking the Show All Headings button or show just the headings down to level 9 by clicking the Show All Headings button twice.

If you have only one or two levels of headings visible, you can expand a section of your document to see the headings and text below it if you select the heading and click the Expand button on the toolbar. Keep pressing the Expand button – every time you click it another heading level appears until all the headings and body text are visible.



### Quick Tips

## CREATING POWER POINT FILES

→ You can easily create PowerPoint presentations from an Outline you have already created in Word. Similarly, you can export a PowerPoint outline to Word to work on it there.

To send a PowerPoint Outline to Word, open the presentation and choose File, Send To, Microsoft Word. Choose the Outline Only option and click OK. Word opens with the Outline already in place ready for editing.

To export a Word Outline to PowerPoint, open the Outline in Word and choose File, Send To, Microsoft PowerPoint. PowerPoint will open with your Outline already in place. Each Heading 1 style will become a slide title. All text formatted with a Heading 2 or lower level style will become text on the slide. The level of heading will determine the level of the text, Heading 2 will become first level slide text, Heading 3 becomes second level slide text and so on.

You can also create slides from an Outline on the fly in PowerPoint. Either create a blank presentation or instead, open a presentation into which to add more slides.

Click the place where the slides which will be inserted and choose Insert, Slides from Outline. Browse to find the file containing the Outline, select it and click Insert. The slides will be automatically created for you.

↑ Outlining enables you to easily develop a document from the top down, repeatedly dividing the topic into smaller and smaller pieces.

← With all the headings collapsed except those in the area you're working on you can focus more clearly on what you are writing.



## → Using your own Styles

### We show you how

→ If you use your own named Styles rather than Word's heading Styles you can easily associate your Style with an Outline level. Place the insertion point in a paragraph which is formatted in the Style to link to an Outline level and choose Format, Style, Select Modify, Format, Paragraph, Indents and Spacing tab. In the Outline level: list box select the level to associate with this style and select OK, OK and Close.

You can automatically format an Excel outline – whether it has been created automatically or manually. Place your cell pointer somewhere in the area covered by the Outline and choose Data, Groups and Outline, Settings and click the Apply Styles button.

Changing the Style of an Outline. Excel uses built in styles to format

the Outline and you can alter these if you wish. Choose Format, Style and choose the Outline name to alter. RowLevel\_1 and RowLevel\_2 and so on format the rows, ColLevel\_1, ColLevel\_2 format the columns.

If you want to remove the Outline symbols from your Excel worksheet but not remove the Outline itself, you can. Choose Tools, Options, View tab. Disable the Outline symbols check box to hide the symbols (enable it to display them) and click OK.

If you use Word's Outline view to collapse a document to a summary form so it shows only the major headings you can print this by selecting the Print button on the toolbar or select File, Print. Don't choose File, Print Preview because you can't print a partially collapsed outline from Print Preview.

Most of Word's Outline features are accessible by shortcut keys, here are a few useful ones: [Alt] + [Shift] + left arrow/right arrow – promote/demote the paragraph; [Alt] + [Shift] + plus (+)/minus (-) – expand/collapse the text below a heading; [Alt] + [Shift] + up arrow/down arrow – move the selected paragraph up or down the document.

Show Formatting button to hide the formatting – this is a toggle button.

### Using the mouse

In addition to the keyboard and the toolbar buttons you can promote or demote any heading using the mouse. Hold the mouse pointer over the Outline symbol next to the heading and drag it to the right to demote it and to the left to promote it. A guide line appears to show the level you are altering the paragraph to. You can also drag a paragraph's Outline symbol up or down to move it – this time you'll see a horizontal guide line showing where it will be moved to.

### Working in Outline view

Two handy buttons which appear on the Outline toolbar in Outline view are the Move Up and Move Down buttons. These enable you to move a paragraph up or down through your document.

If you're used to working in Normal or Print Layout View you'll find that Outline view behaves a little differently.

In Outline view, when you type a heading in one heading style and press Enter, the next line will appear at the same level – in contrast to the other views where the heading style is usually followed by Normal Style (body text). The reason for this behaviour is that Outline view is designed to enable you to create your document from the top down. When you do this, you'll type your major headings first and then go back to create the subheadings under each heading and so on.

### Auto numbering an Outline

If you need to number a document, you'll find Outline view is a good place to do it. Select the document or the paragraphs you want to number and choose Format, Bullets and Numbering, Outline Numbered tab. Choose the numbering style to use from the visible options – however be warned, the top row of options will number both the headings and the body text while the bottom row will number only the headings.

If none of these options are perfect for your needs, choose the best one and click Customize. The Customize Numbered Outline List dialog lets you alter the number style, alignment and indenting as well as adding text and symbols to surround each number. Use the 'What's this' help button to learn more about the options or look up 'Bullets and numbering' in the help index.

Next month, we abandon Office2000 for Lotus' contribution to the office app – Smartsuite. **PCP**

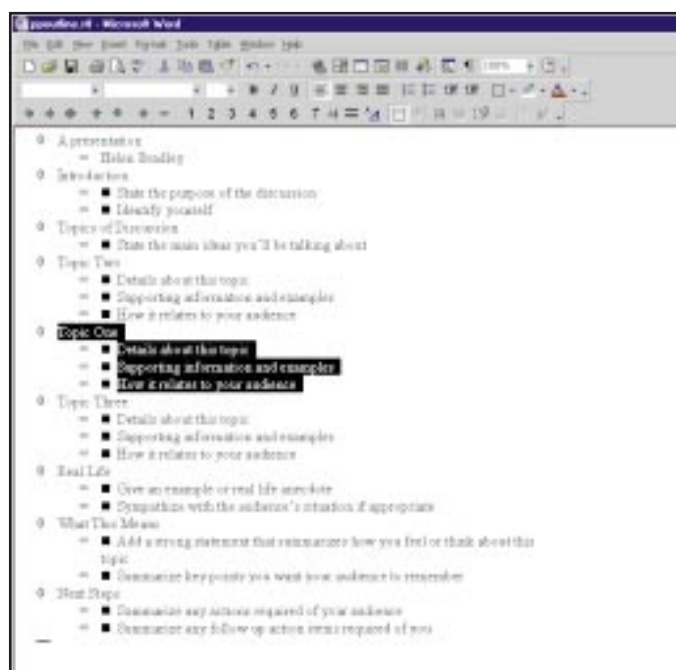


**Helen Bradley**  
helen@journalist.com

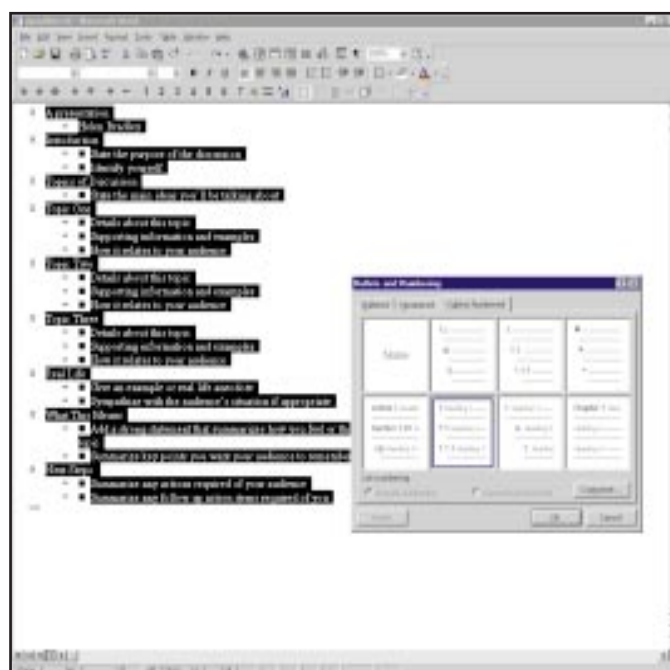
## PCPlus

### NEXT MONTH

Helen waves a fond farewell to Office, and turns her attention to SmartSuite 97



↑ Using the Move Up and Move Down buttons you can move entire blocks of the document's hierarchy to a new position.



↑ Using the Outline Numbering options you can easily number an entire document based on the document hierarchy.

# → Creating an Outline in Excel

If you've set up your Excel worksheet correctly then an Outline can be created in one step.

	Feb	Mar	Qtr 1	Apr	May	Jun	Qtr 2
Widget sales							
Green widgets	20000	74056	20000	20000	20000	20000	92465
Red widgets	15000	56224	20000	20000	20000	20000	98000
Really Big widgets	10000	48087	10000	10000	10000	10000	47995
Total Sales	45000	178367	50000	50000	50000	50000	238460
Other income							
Investment income	5000	5000	5000	5000	5000	5000	18000
Widget licences	15000	15000	17000	18000	18000	20000	59000
Widget promotional	8000	8000	8000	8000	8000	8000	28000
DIY Widget video	20000	27000	32000	35000	35000	41000	111100
Total Sales	58000	65000	62000	66000	66000	71000	243000
Overall Sales	103000	122867	112000	116000	116000	121000	481460

**1** A worksheet with summary columns to the right of the data they relate to and the summary rows below the data they summarise can be outlined in one step. Select the area covered by the worksheet and choose Data, Groups and Outline, Auto Outline.

	Feb	Mar	Qtr 1	Apr	May	Jun	Qtr 2
Widget sales							
Total Sales	45000	178367	50000	50000	50000	50000	238460
Other income							
Total Sales	58000	65000	62000	66000	66000	71000	243000
Overall Sales	103000	122867	112000	116000	116000	121000	481460

**2** The resulting Outline enables you to collapse parts of the worksheet to concentrate on other parts of it. Click the + and – (plus and minus/expand and collapse) buttons to view more or less of the worksheet.

	Feb	Mar	Qtr 1	Apr	May	Jun	Qtr 2
Widget sales							
Total Sales	45000	178367	50000	50000	50000	50000	238460
Other income							
Total Sales	58000	65000	62000	66000	66000	71000	243000
Overall Sales	103000	122867	112000	116000	116000	121000	481460

**3** If the auto Outline process doesn't work properly you can remove it and add an Outline manually. To remove the Outline, choose Data, Groups and Outline, Clear Outline.

	Feb	Mar	Qtr 1	Apr	May	Jun	Qtr 2
Widget sales							
Total Sales	45000	178367	50000	50000	50000	50000	238460
Other income							
Total Sales	58000	65000	62000	66000	66000	71000	243000
Overall Sales	103000	122867	112000	116000	116000	121000	481460

**4** To Outline manually, select the columns which contain the data which is summarised in the totals rows. Choose Data, Group and Outline, Group. Repeat for all the columns to group together.

	Feb	Mar	Qtr 1	Apr	May	Jun	Qtr 2
Widget sales							
Total Sales	45000	178367	50000	50000	50000	50000	238460
Other income							
Total Sales	58000	65000	62000	66000	66000	71000	243000
Overall Sales	103000	122867	112000	116000	116000	121000	481460

**5** Now choose the rows which need to be grouped together. These will be the rows which provide the data which is summarised in the totals columns. Choose Data, Group and Outline, Group. Repeat for all the rows to group together.

	Feb	Mar	Qtr 1	Apr	May	Jun	Qtr 2
Widget sales							
Total Sales	45000	178367	50000	50000	50000	50000	238460
Other income							
Total Sales	58000	65000	62000	66000	66000	71000	243000
Overall Sales	103000	122867	112000	116000	116000	121000	481460

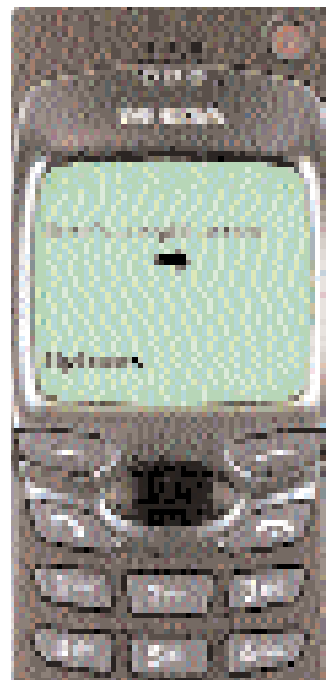
**6** Now go back over the columns and rows to see if larger groups can be created. Here the data in the rows contributes to the sub-totals and the totals so a larger group can be created to finish the outline.



## WAP secrets: FINAL PART

# How to add graphics to WAP sites

**Simon Bisson** takes a look at how you can add images to your WAP pages – and tries a few little tricks with WAP's built-in timers



↑ Here's our simple WBMP deck running on the new 7110i simulator. You'll need to test on other simulators if you're targeting other phones.

**M**ost of the WAP sites in use are pure text, lists of information and interminable menus and pick lists. It's like the Web back in the early 90s – only this time without any pictures. But images make working with information easier, especially when user interfaces are limited. In order to be successful, the wireless Internet shouldn't just be text. A weather forecast is quicker to

interpret with weather map icons, and a what's-on guide easier to understand if icons are used to distinguish restaurants from cinemas. So how can we make our WAP applications more compelling?

In our previous two excursions into WAP and WML we looked at how you can deliver text information to mobile phones. But text isn't all you can send to a WAP phone, and WML has the tools you need to add images to your WML pages. You shouldn't expect the

complex graphical abilities of the latest HTML browsers – for one thing, the displays on most WAP mobile phones are small, just four lines of text on a tiny scrollable display. Any images you start to add to your WAP decks will need to take this into account. This means that WAP isn't a tool for banner adverts or complex graphical buttons and, even though you can use an image as a hyperlink in a WML card, it's not really a good idea.

The simple micro-browsers used in most WAP phones just aren't capable of handling the complex algorithms used to produce compressed colour graphics, so all images used will need to be as simple as possible. As a result, you won't be able to use your favourite GIFs and JPEGs on a mobile phone. The WAP Forum, the organisation that sets the WAP standard has defined a specific image format: WBMP, the Wireless BitMap. WBMP is a 1-bit image format, so images can only be black and white.

You can download various WBMP editing tools from the Internet, or use the tools built into some of the WML development suites provided by the various phone companies. If you're using the popular Macromedia Dreamweaver 3.0 HTML design tool along with the Fireworks graphics package, you can download a Nokia-designed WML layout tool for Dreamweaver that also includes a Fireworks add-on that will save your images in WBMP format, ready for use in your WML applications. The latest version of the Nokia WAP

Toolkit also includes a WBMP editor, so you can create images and test your decks at the same time.

So, how do you add images to your WML decks once you've created them? Well, if you've ever put images in a Web page, you'll find adding images to a WML deck easy. Just like HTML, WML has an 'img' tag. The basic syntax of the WML image tag is similar to its HTML equivalent:

```

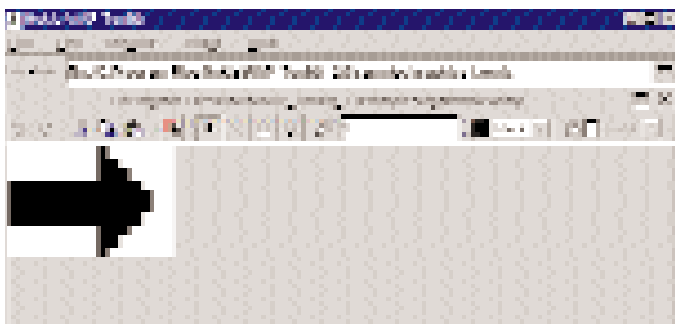
```

The 'img' tag is really designed to be ready for the next generation of phones. Whilst you can specify the height and width of the image, the spacing around it isn't really applicable to the small displays used in most WAP phones. It's only useful with larger screen sizes used in devices like the forthcoming Ericsson R380 phone (based on the Symbian EPOC operating system, just like the latest Psions). If you're going to send images to the phones already in use, all you need to use are the 'alt', 'src' and 'localsrc' attributes.

Just like HTML the alt attribute defines a text message that is displayed on devices that don't support images. Some of the more primitive WAP phones in use will need this because they are unable to display images. You'll also find the 'alt' description used in hyperlinks rather than the image, if you've made the mistake of



↑ The latest Nokia WAP Toolkit is the best tool for building WAP sites we've seen. It may look just like the previous version, but it's a lot more powerful.



↑ The WAP Toolkit's WBMP editor is a simple enough tool, ideal for creating your own WAP icons. It'll even convert GIFs and JPEGs to WBMP format.

turning an image into a clickable link – something that works well in HTML, but isn't possible in WML.

The 'src' and 'localsrc' attributes define the location of the image you're using. Just as in HTML, the 'src' is the URL of the image you're going to use. This doesn't have to be a full path – relative URLs to the parent deck are easiest to use, and the easiest to maintain. Don't forget to make sure that you're pointing to a WBMP image. Some WAP gateways (the proxies between the Internet and the mobile phone) will automatically convert images to WBMP, but you should never assume that this will always be the case. To speed things up, some phones support the 'localsrc' attribute, as transferring even the smallest image over a 9600 bps cellular data connection takes time. This is used to describe a locally stored icon, which is held on the phone, rather than being downloaded every time you need it.

Even with this limited selection of attributes, you'll need to be careful because not every micro-browser supports every section of the tag. If you're targeting Phone.com phones then you'll be able to use the 'localsrc' attribute. It's one that you'll find useful because it speeds up page rendering by using a local icon stored in the phone's ROM rather than downloading it from the server over a slow wireless connection. Unfortunately, Nokia phones don't support this function, so you'll always need to create a server copy of every image. Conversely, the Nokia phones support the height and width descriptions, unlike Phone.com

phones. And there are phones that can't handle graphics at all, so you'll need to use the 'alt' attribute if there's important information in the image.

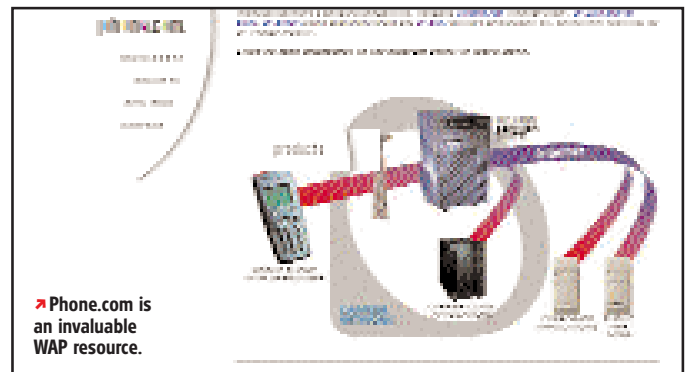
If you want to use the Phone.com library of image icons you'll need to download the UP SDK from the Web. This is a fully-featured WML development and test tool that you can use to create your WML pages. However, it's the documentation you'll really want to get your hands on. This is in the form of several sets of HTML pages, amongst them an excellent WML reference that includes a list of all the available phone icons – along with pictures showing you just what your users are going to see.

## So what does this mean to you?

You'll need to think very carefully how you create images for your decks. Certainly it's a good idea to use icons that are built into the Phone.com micro-browser, but you will need to create server-side copies of them for use in Nokia and Ericsson phones.

To use the following section of WML you'll need to create a WBMP image of a right facing arrow. The new Nokia WAP Toolkit is an excellent environment for this, as not only will you be able to edit and create your WBMP arrow, you'll also be able to write and test your WML code.

```
<wml>
<card>
<p>
Here's a right arrow:
<br/>
```



```
<img alt="->"
src="rightarrow.wbmp"
localsrc="rightarrow1"/>
</p>
</card>
</wml>
```

This is a card that will display on any WAP phone, as a Nokia will download the WBMP image, whilst a Phone.com-based phone like Motorola's P7389 will use the local icon. Any phones that don't support WBMP graphics will use the simple ASCII art in the 'alt' attribute.

You can't use WAP for animated images, but one feature of WML may help. This is the timer. By using the 'ontimer' attribute of any card you can force a deck to load a specific card after a set amount of time. You can only have one timer per card, but several timed cards in sequence could give you quite a useful tool for creating animations, switching between WBMP images or local icons. Unfortunately, you can't create a loop effect, so anything you want to do will have to be a sequence of cards. Just remember not to create too large a deck!

The following snippet of code is a simple two card timer-driven deck. The first card initialises a five second timer – the value of the timer is calculated in units of 0.1 seconds, so a value of 50 is equivalent to five seconds – and displays a text message. The second card then displays another message:

```
<wml>
<card ontimer="#card2">
<timer name="time"
value="50"/>
<p>
Hello, PC Plus!
</p>
</card>
<card id="card2">
<p>
Let's go to the next card.
</p>
</card>
</wml>
```

There's a lot you can do using the timer in conjunction with 'do' blocks. You can create decks that will jump to a default page after a short wait for a user to make a selection, or just give your WML site a simple graphical entry point.

Creating WAP sites is an interesting exercise in creating compact code and simple user interfaces. We've only covered some of the features of this intriguing new technology – a technology still waiting for its killer application. Think about what information you want to see on a mobile phone – there's every chance that your WAP site will be that missing killer app in the wireless Internet revolution... **PCP**



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## → Building sites quickly

**Throw out FrontPage – the wireless Internet requires a whole new set of development tools...**

Where you may have used FrontPage or HomeSite to produce your Web pages, you'll now find yourself working with any of several different WAP development environments. Luckily it won't cost you a fortune to get a good WAP development tool because the mobile phone manufacturers are giving them away! Just sign up to their developer programmes and you can start downloading tools like Motorola's ADK or the Nokia WAP Toolkit – which also come with excellent documentation.

### What you get

A good WAP development tool will contain an editor, a debugger and a phone simulator. You can use the editor to create your WML, and then test it with the debugger and the phone. Some tools will even simulate WAP

Gateways, so you can test your WAP sites as if they were connecting over a wireless connection. You'll also be able to use the phone simulator as a WAP browser, so you can see just what sites people are putting out there – without having to pay Cellnet or Orange for the privilege.

If you're going to work at developing a WAP site, you're going to need to download virtually all the development packages available – which can keep you on like for many hours, as most of them are over 10MB, with Motorola's ADK clocking in at over 20MB! Whilst you may use just one tool to create your WML decks, you'll need to use them all to test your pages, as no two WAP phones display pages the same way. In fact, they may even support different subsets of WML.



↑ Here's our test WBMP deck running in the Phone.com SDK's default phone, using the 'localsrc' version of our icon.

**PCPlus**

**NEXT MONTH**

Our series shifts off the page and online as we take a look at how you can work with WML templates and events

## Expert techniques: PART TWO

# Bringing back frames

Paul Stephens resurrects a technology that has suffered much, and had its reputation bruised – now is the time for frames...



handson\prog\files\web

**F**rames are a good idea which are now, rather belatedly, coming into their own. Introduced by Netscape in Navigator 2.x, they let you divide the browser screen up into a group of viewports, called a frameset.

Each frame in the set displays its own HTML page, wrapping and scrolling its contents like a free-standing mini-browser. A hyperlink in one of these pages can load a new page into the same frame, or into any other frame in the set.

Scripts in a frameset's pages, meanwhile, can access each other's data and call each other's functions. As a way of creating multiple screen zones which are independent but easily coordinated, it couldn't be much better.

These days it seems to be almost obligatory for a Web site to have a side/top menu bar which loads content pages into a main viewing area, and frames were

purpose-built for the job. However, they weren't an instant success. This was mainly due to incompatibility with the browser – although Microsoft's Internet Explorer quickly adopted Netscape's design – for the first couple of years there were still too many people using older, pre-frame browsers to make frame-dependent Web sites viable. Today, with the vast majority of users running frame-enabled browsers, it's safe to build your site using a frame-based layout. **PCP**



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PCPlus

NEXT MONTH

Cookies let you store data on your site visitors' disks and are easy to program.

## → Frame, set and match

Any self-respecting modern WYSIWYG page editor will create framesets for you...

This will enable you to interactively adjust frame sizes, set border widths and so on. However, the underlying HTML code is fairly simple stuff, and understanding the basics will make problem-solving much easier (for details of all the frame-building HTML options, plus sample Web site layouts, see this month's **SuperDisc**).

To divide the screen into a set of frames, you use a frameset document. This is just a Web page (.htm file) containing some special frame-defining tags. These tags also specify which pages to load into the newly-created frames, so the frameset document becomes the opening URL of your site or site-section (typically called 'index.htm'). Here's a simple frameset document:

```
<html><head>
<title>Super-Site!</title>
</head>
<frameset cols="150, *">
  <frame src="menupage.htm">
  <frame name="main" src="splashpage.htm">
</frameset>
<h1>Sorry, you need frames to view this site!</h1>
</frameset>
</html>
```

The document starts with standard `<html>` and `<head>` tags, and defines a `<title>` element which appears in the browser's title bar. Normally the `<head>` section would be followed by a `<body>` tag, but this isn't allowed in a frameset document – instead it must contain a frames-defining `<frameset>` / `</frameset>` block.

The `<frameset>` tag tells the browser how to divide up the screen – in this case into two columns (vertical frames), the left-hand one 150 pixels wide, the right-hand one occupying the rest (\*) of the browser screen.

To split the screen horizontally, use a `rows=` attribute instead. As well as pixels and \*, you can specify percentages of the screen width/height. To split the screen into more than two frames, just add more items to the columns or rows value. Here's an example:

```
<frameset rows="150, *, 25%">
```

This creates three horizontal frames, the top one 150 pixels deep, the bottom one 25 per cent of the screen height, and the middle one occupying whatever's left. You can also mix `rows=` and `columns=` attributes in a single frameset, so this code:

```
<frameset cols="150, *" rows="100, *">
```

would create four frames, starting with a 150 X 100 frame in the top left-hand corner of the screen.

The `<frameset>` tag must be followed by a `<frame>` tag for each frame it's defined (the exception to this is nested framesets, used to create irregular row/column layouts – see the **SuperDisc** for details). A frame is just an empty space, and the `<frame>` tag's most important job is to fill it with an HTML page, via its `src=` attribute. An important optional attribute is `name=` – giving a frame a name enables you to use it as the target for cross-frame hyperlinks, and enable HTML pages in it to engage in cross-frame scripting (see below). Other `<frameset>` and `<frame>` attributes let you control the frames' scrollbars and border size/colour and prevent the user from resizing frames. See the **SuperDisc** for details.

The frameset document's `<noframes>` / `</noframes>` block is optional, and encloses standard HTML page content which will be displayed by non frame-enabled browsers (and ignored by frame-enabled ones). You can put whatever content you like between these tags – some sites have a 'sorry, you need a frame-enabled browser' message, while others have an opening page for a non frame-based version of the site.

### Cross-linking

An HTML document doesn't have to have any special tags or script code in order to work in a frame – it simply behaves as if it was running in the full browser screen, and any hyperlinks it contains automatically load their target pages into the same frame.

This makes it very easy to convert an existing Web site to a simple frames-based structure – just load your current start-of-site page into a main viewing frame, place a new menu page in a frame alongside it (offering links to your site's sections), and you've got an instant quick-navigation layout. Your new sidebar menu page will have to include some frames-specific content, but not very much and, if you're lucky, your WYSIWYG editor (such as FrontPage 2000) will add it for you, anyway.

The hyperlinks in a menu page need to load their pages into a different frame from the one the page is running in, and an extra tag attribute, `target=`, makes this happen. The value of `target=` must be a frame name, so any frame you want to use as a target must have a `name=` attribute on its `<frame>` tag. `Target=` attributes can be used in two ways. First, they can qualify individual hyperlinks, like this:

```
<a href="section1.htm" target="main">
```



## → The secret life of frameset documents

Frameset documents are capable of more than simply sub-dividing the screen

Framesets are a great place to store script code and data, which you can then access from in-frame documents. As well as making it easy to share script items between sibling frames, this technique also makes it simple to share them between pages which replace each other in the same frame.

You can add `<script>...</script>` blocks to the `<head>` section of a frameset document, just as you can to a regular HTML page. A frameset document is the parent of the documents which run in the frames it's defined, so in-frame pages can reference its objects via the `window.parent` object identifier. Here's a simple JavaScript example, in the frameset document:

```
var roundNum = 0
globalData = new Object()
globalData.score = 0
```

And here's an example in a child document, running in one of the frameset document's frames:

```
window.parent.roundNum++
window.parent.globalData.score++
```

You can also call frameset-document functions from a child document, like this in the frameset document:

```
function addToScore(addValue) {
  globalData.score += addValue
}
```

And this in a child document:

```
window.parent.addToScore(14)
```

This access system also works from the frameset document to a page running in one of its frames, provided you've given the frame a name via a `name=` attribute on its `<frame>` tag. Here's an example:

```
<frame name="main"...
```

Code in the frameset document:

```
main.dataObject.dataProperty++
main.updatePageScore()
```

You can even communicate between frames, using the frameset document as a bridge. For example, a script in the document 'menu.htm' could say:

```
window.parent.main.update
PageScore()
```

and so on. Note that, in each case, it's the frame name, not the document name (for example "splashpage.htm") that's used – this means that the code will work with any document, provided that it contains the specified objects and functions (if it

Online Store  
Departments...

Intro

This document is the first in our frameset, and provides a menu system. When you click on a hyperlink it loads a new document in the document to the right.

Price	Quantity	
29.99	2	<input checked="" type="checkbox"/> Bas
5.99	0	<input type="checkbox"/> Bas

Our shopping cart system makes use of form controls and tables in addition to the frame containers – a little bit of everything is included this month!

Code...

In the

Code D

P001

The border divides the two documents in the frameset. In this instance we haven't passed any arguments in the code to control the appearance of the border, so IE renders it as a four pixel wide bar.

Price

Quantity

29.99 2

5.99 0

☒ Bas

Here is the code for creating a new object, which includes the current page location, product codes, and details of the parent window.

doesn't, you'll get a run-time error). It will even work with different documents which load into a frame during a browsing session – too see this in action, view the shopping-cart example on the **SuperDisc**.

### Context

When you're calling a remote function (in another frame or the frameset document), it's vital to remember that it will execute in the context of the document that contains it. If it references any variables, objects or other functions, they'll be assumed to be in the remote document too. If you need to make a remote function manipulate data items in the calling page, then the simplest and most fool-proof way of doing it is to make the items properties of a user-defined object, and pass a reference to the object as a parameter to the remote function call. Here's an example in the frameset document:

```
function calcAverage(dataObject) {
  dataObject.average =
  dataObject.total /
  globalData.roundNum
}
```

And an example in a child document:

```
localData = new Object()
localData.average = 0
localData.total = 0
...
```

```
window.parent.calcAverage
(localData)
```

The frameset-based function doesn't need to know where `dataObject` actually is, so could process an object from any frame, or its own home document. Another way to tidy up object references is to use pointers.

For example, if a child page needs to access a range of functions and data objects in its parent (frameset) document, it can have code like this near the top of its `<head>` section:

```
calcAverage = window.parent
.calcAverage
globalData = window.parent.
globalData
```

then later on use simple references such as:

```
calcAverage(localData)
globalData.score++
```

This technique isolates remote references in a single section of the page's source code, reducing the risk of errors elsewhere. It also makes the page easier to maintain – if you later decided to store the remote objects somewhere other than in `window.parent` (perhaps even within the local page itself), then you'd just change the 'hookup' section, and leave everything else alone.

This link loads the page 'section1.htm' into the frame called 'main'. For pages containing a number of links all to the same target frame (such as a typical sidebar menu), there's an easier way of doing things – just put a tag like this in the document's `<head>` section:

```
<base target="main">
```

Now all the page's links will, by default, target the frame 'main'. If you need to make an individual link target something else, you can give it its own `target=` attribute, which overrides the `<base>` tag's setting. Here's an example:

```
<a href="submenu1.htm" target="_self">
```

The special target name `"_self"` means 'the frame this page is running in', and is useful

when you want to replace one sidebar menu page with another. Another special target name is `"_top"`, which means 'the full browser screen, removing any frames'. It's especially useful in pages which contain hyperlinks to other Web sites. If you link to, say, [www.pcplus.co.uk](http://www.pcplus.co.uk) from a page that's running in a frame, then PC Plus Online will, by default, appear in that frame. To avoid this, you can say:

```
<a href="http://www.pcplus.co.uk" target="_top">
```

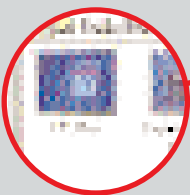
If you've got a page full of external links, then you can use a `<base target="_top">` tag to convert them all. On this month's **SuperDisc** you'll find a detailed guide to frames, listing all the tags and attributes plus details of scripting frame-tag events. There's also a sample 'shopping basket' application, showing how to use a frameset document as a container for scripts and data. Until next month, happy authoring!

## → Movie Maker in action

Know your icons before you get started...

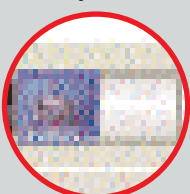
### Previews window

This window displays a single-frame preview of each of the clips in a collection.



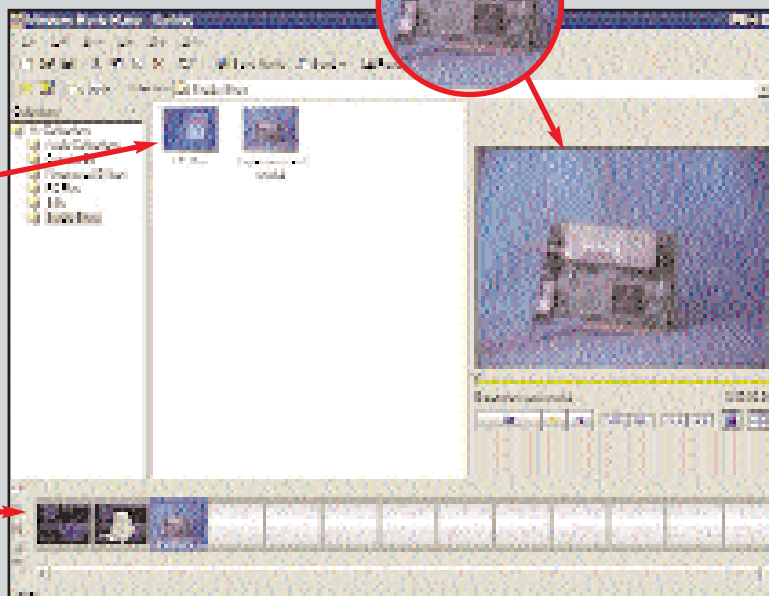
### Storyboard

This space is used by the timeline view – you structure your movie here.



### Video preview

You can use this window to quickly run through clips, and then preview your whole movie.



that you can easily drag and drop files into and around the workspace. Each source file that you drag into the collection space creates a new collection, which may seem a little unusual at first. The reason for this is quite simple and is demonstrated by a video clip that we pulled off an old **PC Plus SuperCD**. When we imported an AVI file of Comdex 98, Movie Maker detected the points where the file had been digitally 'spliced' during creation and created five different clips out of one file. These separate clips then made one collection called Comdex 98.

### Digital animation

I dived in to my collection of **SuperDiscs** and used TrueSpace and 3d F/x to create an animated introduction to the movie. The first animation spins a computer on to the scene, then the second video spins the computer out and drops the words 'PC Plus' in. In the absence of proper captioning tools, this is the nearest you're going to get to dropping subtitles into your movie. My movie is going to refer to installation screens within MacOS, so I have taken some screenshots and saved them as .bmp files. These were then imported to their own collection called Stills.

Copyright management is important to anyone creating digital video, so I used the 'properties' dialog for each preview to set Title, Author, creation date and copyright notes for my media. It's an easy procedure that involves right-clicking on each preview, selecting 'properties' and entering the information. If someone questions the originality of a particular clip at a later date, I will immediately be able to confirm my position. Even the most amateur of amateur movie producers needs to watch their back with copyright.

So, the time has come to put all of this together – digital animation, video footage and an audio track in one package, which will ultimately be exported using Windows Media Video (WMV) format. WMV is the new high-compression video format from Microsoft that supercedes the old, bloated, AVI format. Pull out the director's chair, prepare the lights, Webcam, aaaaand action! **PCP**



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**PCPlus**

**NEXT MONTH**

New series! We reveal how to keep your Net connection secure

## Movie Maker special report

# Making digital movies

**Rob Fenwick** cracks open Windows ME and reaches for the Windows Movie Maker

**B**y the time this issue of **PC Plus** makes its way into your hands, Windows Millennium should be released.

If Microsoft has slipped the date, then I promise you'll find this **Masterclass** useful when WinME finally makes it out of the door.

Assuming you're tinkering with the new tools that ME offers, then you will probably have stumbled across the Windows Movie Maker. As you will have seen from the shiny iMac adverts, Apple believes that the future lies in digital video – so much so that it has re-focussed its entire iMac range around that assumption. Microsoft doesn't have such a strong belief in the power of digital video, but it has created a Movie Maker application 'just in case' it takes off.

That 'just in case' mentality is clear when you're using the Movie Maker – some of the features that you would expect of a movie editing application, such as the ability to add transparent captions and transitions, are missing. This is a shame because the Movie Maker application itself is well designed and easy-to-use, just lacking in solid features.

That said, what can you do with Movie Maker as it is now? Well, we'll take a look at the video library functions of the application, do some basic video editing and start throwing a sound track around. We'll use the built-in recording features to create new video clips and, at the end of it all, we'll have created a self-help video.

Movie Maker isn't just for those lucky few who own the latest

wallet-killing digital video cameras. To obtain the video footage that I've used in this month's **Masterclass**, I strung a blue bed sheet up against the kitchen cupboard and attached a Webcam to my laptop – an instant video studio, although obviously it's not ready to challenge Warner Bros just yet!

### Getting to know you

The idea behind Movie Maker is that almost every piece of media on your PC, be it a video, sound file or still image, can be used as part of a movie. If you're anything like me, then your hard drive is littered with unknown WAV files and four million screenshots taken for various reasons, so you're going to need to find a way of managing all of that creative potential.

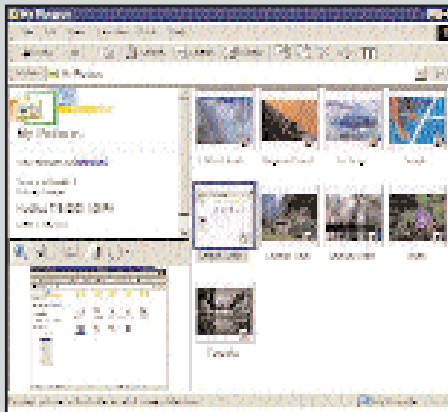
Movie Maker uses 'collections', which are essentially folders that contain previews of your media so



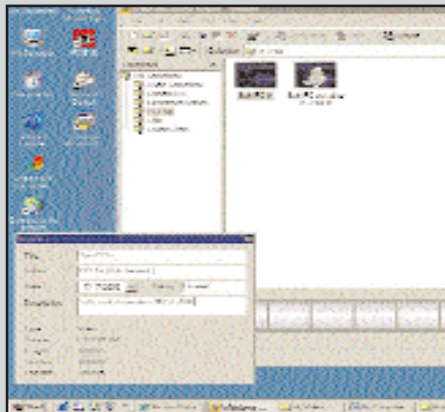
[www.pcplus.co.uk/forums/windows](http://www.pcplus.co.uk/forums/windows)

## → "I made this!"

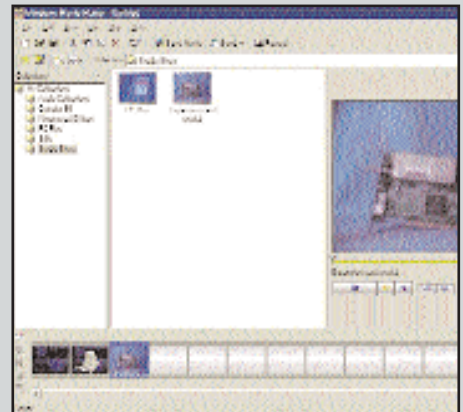
Follow our whirlwind guide to Movie Maker, and you could be the next Steven Spielberg...



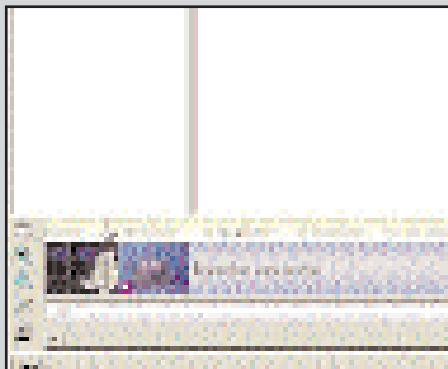
**1** Millennium makes much use of My Document, My Pictures and My Videos folders. If you collect your media files into these central locations they are much easier to manage. Try to gather all your media together before you begin the project. Having a clear vision of the files you are working with makes things much easier in the long run. If you don't have to create media during the compilation process, you don't need to constantly jump between the roles of director and designer!



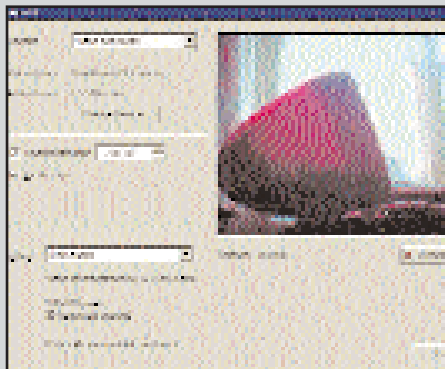
**2** Drag the clips you are going to use out of Explorer, and on to the Movie Maker interface. Movie Maker automatically creates collections, which you might like to re-name for the sake of clarity. Right-click on each clip and select Properties then fill in the relevant fields to help you manage the information available for each clip. You never know when you may be asked to name the source of a particular image!



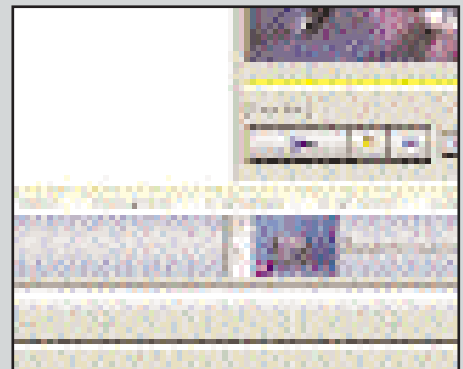
**3** Now drag your clips, in the required sequence, from the collection window on to the storyboard at the bottom of the screen (the part that resembles a reel of 35mm film). If you make a mistake in the drop order you can drag and drop clips around the storyboard until you are satisfied that everything seems to be correct. To take a rough look at how your video will look, right-click on the storyboard and select Play entire storyboard/Timeline.



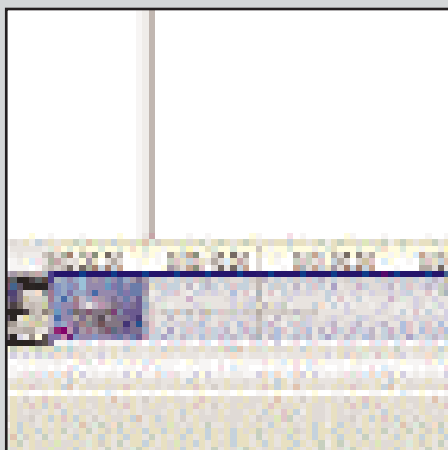
**4** Select View > Timeline. This changes the view mode to Timeline and enables you to perform basic clipping and editing functions with your video. Above the clips in the storyboard you will see a location indicator that you can drag up and down the movie to take you to a specific point. This is useful for running a quick preview – simply drag the marker and run it along the length of the video.



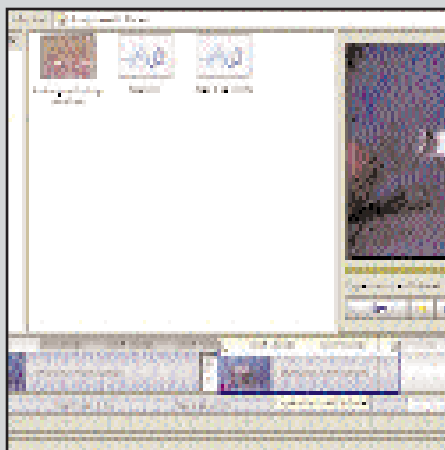
**5** Using the 'record' button, I can create a new clip using input from my Webcam. I'm not going to record any audio in this video, as I will add that on later. Movie Maker can use any capture device on your system to record new video. Here, I've recorded a two minute clip about installing an expansion card in a Macintosh. Thankfully, for the sake of my professional credibility and personal sanity, this video will never see the light of day!



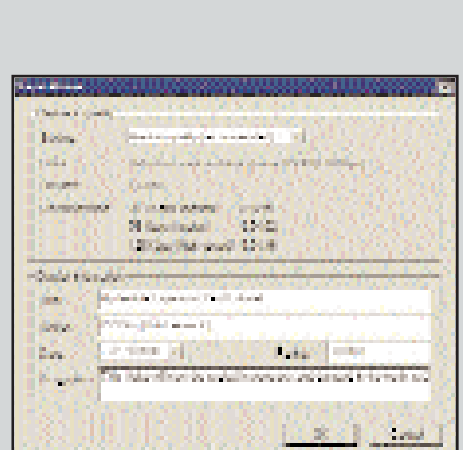
**6** The main clip is a walkthrough about installing an expansion card. Halfway through this clip I want to insert a screenshot to demonstrate driver installation. Drag the screenshot on to the end of the timeline, and drag another copy of the expansion card video on to the end after that, so that the order is Video > Grab > Video. By default, still images are given five seconds of time in the timeline. You can reduce this if you wish.



**7** I need to select the first piece of expansion card video, and end it at the point where I want the screenshot to be displayed. I then need to set the second piece of video to pick up where the first clip left off. When you select a clip in the timeline, two trim controls become available above the clip. By dragging the End Trim control, I can end the first clip after one minute and twenty seconds. Dragging the control back will reinstate the clipped video.



**8** I trim the screenshot's run time to two seconds and then, using the Start Trim control on the second piece of video, I set it to pick up where the first part left off. This gives the impression of the first clip resuming automatically after the screenshot has been inserted. I select File > Record Narration, and the video plays through as I talk over the top of it. Afterwards, I can add music to the soundtrack using the same clipping technique used in steps 6 and 7.

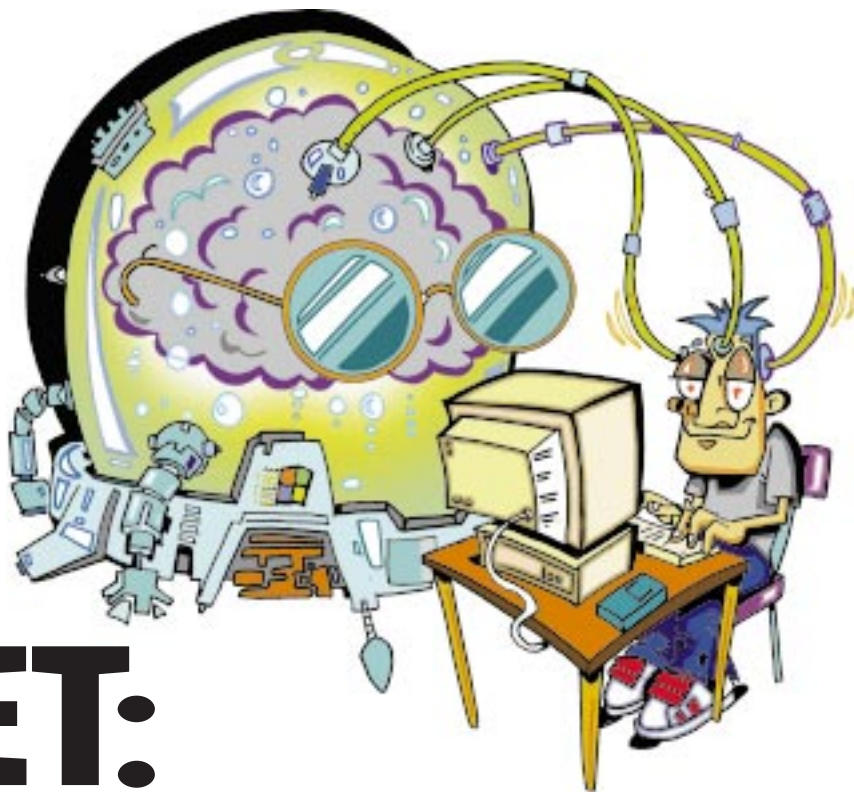


**9** Finally, I save the file in WMV format, using the medium preset quality option. I've added a few final comments that applications such as the Windows Media Player will be able to read, and the save dialog gives me some useful information about file size and approximate download time. Once all that is done, it's time to erase all traces of my home video attempt from the hard drive and return, once more, to normality.



# FRONTDESK

→ Latest headlines posted daily at [www.pcplus.co.uk](http://www.pcplus.co.uk)



## .NET: MICROSOFT REVEALS PLANS

→ **A vital new direction or collection of old technologies with a new logo?**

**M**icrosoft is betting the future on its planned .NET service. This will be a future where all computing activities will take place on the Internet. Software will become services that users rent as they need them. Businesses will no longer need large IT support departments – the support element will largely move to Microsoft or other service providers. It will no longer be necessary for businesses to roll out software upgrades and the quality of support should improve because there will be less variables in the equation.

It's obvious that Microsoft has made up for lost time after its initial scepticism about the Internet as a business tool. And it sees .NET as a way of making much better use of stored information and linking to other devices such as PDAs. Speaking to **PC Plus**, Nick McGrath – Microsoft's Windows Product Marketing Manager – said "Like Microsoft's early

belief that the PC would become ubiquitous both at work and at home, Microsoft has a new vision of an evolving digital world in which the company and its partners will deliver the next generation of Internet experiences on the .NET platform. XML, an open standard, will provide the lingua franca that will enable all manner of smart devices to exchange information, giving users a truly integrated experience. Access to information, whether it's from the PC, the Internet or any other smart device, will be seamless, with improved readability and greater simplicity."

But moving applications and data processing online has inherent security risks. It was reported at the time of writing that half of UK Internet users had never purchased anything online – this was put down to the fear of online fraud. Microsoft .NET will have to be ultra secure because it's assured of attracting the



**"Whilst familiar Microsoft products such as Windows and Office will still be available as boxed software, new versions of these products, Windows .NET and Office .NET, will also be made available. Users will see substantial improvements with .NET"**

most able hackers. With a fully operational service, any disruption could be far greater than so far witnessed with high profile worms such as the Love Bug. In answer to this, McGrath said "Privacy and security features of the .NET platform will build upon Windows 2000 technologies such as Kerberos and Public Key Encryption. User passwords and similar current security provisions will be greatly enhanced by technologies such as smart cards and biometric authentication."

Users have also been confused on how .NET relates to Microsoft's existing products. The announcement of .NET certainly came at an interesting time. With the US Department of Justice demanding that Microsoft split into operating system and application companies, Microsoft's strategy is to move away from such definitions – instead viewing everything as a service.

McGrath told us "Whilst familiar Microsoft products such as Windows and Office will still be available as boxed software for a long time to come, new versions of these products – Windows .NET and Office .NET will also be made available. We believe that consumers will find the same value in subscription services that they get today in traditional boxed applications, especially with the increased convenience and ease of use provided by the .NET platform. Just like the user experience improved dramatically from DOS to Windows, users will also notice substantial usability improvements with .NET. The announcement of Microsoft's vision of .NET has set the wheels in motion for a computing evolution"

Microsoft is clearly enthusiastic about its proposed new service. But it won't all be plain sailing – Microsoft will be relying on other companies when it comes to the Internet infrastructure required for users to be able to access the .NET service. And a recent survey undertaken by The User Group found that 82 per cent of companies said they would never use an application service provider.

## HOW .NET COULD AFFECT YOU

**Would you rather rent your software, or buy it?**

→ Under .NET, users will use Windows .NET to access the services they need online.

→ Renting applications could prove cheaper than upgrading every two years, especially if you include the costs of performing the upgrade. However, you'll be further locked into Microsoft's business model.

→ Many support tasks such as installation, backup and recovery will disappear as the responsibility moves to Microsoft.

## SOFTWARE NEWS

### APACHE POPULARITY BOOST

According to Bath-based Netcraft, the Apache Web server is running on an extra million sites. It now has 62 per cent of the Web server market, compared to Microsoft's bundled Internet Information Server at less than 20 per cent. On Netcraft's Web site at [www.netcraft.co.uk](http://www.netcraft.co.uk) you can type in a name and see all the sites that include that name in its domain. And there's an option to see what server software is running on a particular site.

### WIN 2000 SP1

The first service pack for Windows 2000 should now be available. Likely to be around 60MB, most users will probably prefer to get it on CD-ROM. SP1 incorporates a wide range of fixes for memory leaks, setup issues and some security problems. It also includes previously-issued hot fixes. As with Windows NT 4, new copies of Windows 2000 will not be updated and so all users will be expected to employ the service packs as they come out.

### McAfee LAUNCHES FIREWALL

McAfee has launched a utility called Firewall – designed to protect Internet PCs from attacks from hackers and other undesirable Internet phenomenon. With new technologies and unmetered access meaning PCs are staying connected for longer, McAfee believes users need such a defence. For more information call 0800 092 7160.

### SMARTSUITE GOES ONLINE

Lotus is planning to make SmartSuite available for rent over the Internet for US users. The software will be available for download from Playnow.com – cost \$2.99 for 48 hours.

# PENTIUM 4 CRANKS UP TO 1.5GHZ



→ New Pentium series out in autumn

**T**he next major desktop chip from Intel will be known as the Pentium 4, expected some time in the autumn.

Previously known as Willamette, the new chip will run at speeds up to 1.5GHz. Speed improvements come from the new 'hyper-pipelined' architecture and a 400MHz system bus.

There is also an improved version of the Streaming Single Instruction Multiple Data extensions – for improved encryption and video speed, first seen in the Pentium III.

But analysts claim Intel will find it difficult to move these chips in quantity. This is because users are increasingly sceptical about the fast pace of change in the PC processor market. The extra

competition in this sector from AMD also means that Intel cannot dominate as it did a few years ago. And with more and more activity being carried out on the Internet, many users do not need a lot of processing power locally.

However, Intel has listened to users and scrapped plans for an 800MHz version of its Xeon server chip. Some large users have been critical of the pace of development in the server field – a field where products undergo more rigorous testing and acceptance. The rate of development in recent years has led to some high profile hardware bugs – both in processors and other devices. Business users seem to prefer fewer upgrades, but they would like to gain more from the upgrades they do carry out.

## AOL HIT WITH DOWNLOAD MONITORING LAWSUIT

→ It alleges that downloads made through Netscape's SmartDownload tool have been recorded

**Online** users are increasingly worried about their privacy. Following hot on the heels of DoubleClick's alleged monitoring of millions of users, AOL subsidiary Netscape is being accused of the same practice. Netscape user Christopher Specht has issued a lawsuit against AOL in the Southern District of New York's US District Court.

The lawsuit alleges that AOL is in violation of the Electronic Communications Privacy Act and the Computer Fraud and Abuse Act – by tracking downloads of EXE and ZIP files made through Netscape's SmartDownload utility. Specht also alleges that file information is sent back to AOL, along with details of a cookie left on the user's PC.

When users access the utility from the Netscape



→ On the Internet you never know who's watching.

portal, they are faced with the message 'Download With Confidence Using SmartDownload.'

But it's not clear whether AOL is doing anything more than most other major online providers, most of whom collate download statistics. However, it seems that users are having to take out lawsuits like this because of the absence of any global Internet-specific privacy laws. And users are increasingly making use of security utilities to block cookies for all services apart from those

which require them. Specht appears to be operating on his own, but other users could join him.

The DoubleClick investigation quickly grew, culminating in 15 private class actions and the interest of several official US government bodies.

If the AOL/Netscape case comes to court, the result should make it clear as to what type of Internet monitoring is permissible, if any. But as ever, the result will only apply in the US, and not here.

# 56K MODEM STANDARD SPEEDS UP

→ Better reliability and faster uploads promised



**A**lthough the v90/56K standard was thought to be the end of the line for basic modem technology, the v92 standard has received initial approval. The ITU (Geneva-based International Telecommunication Union) has agreed to three important changes to make these modems significantly more usable. Although current v90 modems can download at speeds approaching 50Kbit/sec (depending on the ISP), upload speeds are much less than this. Under the new standard, upload speeds will rise to a new maximum of 48Kbit/sec in the best circumstances.

The second improvement is that devices supporting the v92 standard should have a much reduced connection time. The new standard allows v92

↑ v.92 – pause your Internet session to take a call.

connections to be recognised and dealt with immediately – cutting out the long period of handshaking that modem users are used to. The last improvement is something that will be of particular interest to home users. This will allow a modem to be put on hold while the user takes an incoming voice call.

Pierre-André Probst, chairman of ITU group that devised the new standard said "These important new features will further improve the Internet user's experience by significantly reducing connect times and providing improved access to new Internet services." Final approval is expected in November but it's up to individual ISPs whether they adopt v92. Users and ISPs will almost certainly need new modems.

# GOVERNMENT ATTEMPTS TO APPEASE RIP CRITICS

→ But some ISPs threaten to leave the UK

**Although** the Government has made some concessions in its battle to establish the Regulation of Investigatory Powers (RIP) Bill, widespread criticism is still apparent. The Government now says it will generally be looking for copies of documents, rather than decryption keys. And when keys are needed, decryption notices will now be served on directors, rather than IT staff. But critics of the Bill see these as cosmetic changes, rather than a fundamental re-thinking. Government Ministers are vigorously defending the Bill,



← Is the Sealand platform out of reach of the snooper's charter?

but ISPs and business and home Internet users know the Bill is flawed. Now, several ISPs are threatening to move their operations out of the UK. The first to announce this was Poptel – a provider of online services to charities, trade unions, local government and co-operatives. UUnet, Claranet and GreenNet have all said that they too would look at re-locating their services to

other countries if the RIP Bill became law. Meanwhile, the Sealand platform (www.sealandgov.com) and (www.havenco.com) off the Felixstowe coast claims it is doing a brisk trade in hosting Web services at its 'unregulated' HQ. However, the Inland Revenue and Customs and Excise both claim that all UK law will apply to the platform.

## NEWS IN BRIEF

### PC MAKERS TO RECYCLE?

Under two proposed European Commission directives, PC hardware makers could be forced to take their goods back for recycling at the end of their useful lives. More details can be found at [europa.eu.int/comm/environment/docum/00347\\_en.htm](http://europa.eu.int/comm/environment/docum/00347_en.htm). How this would affect users is unclear – but higher prices would almost certainly be one result.

### LINEONE DROPS UNMETERED ACCESS

LineOne has angered users by announcing that its unmetered Internet service will be closed down from the end of September. It will be replaced by an off-peak BT SurfTime offering. LineOne users currently have free Internet access if they make at least £5 of voice calls each month. The company denies the move has come about through pressure from BT – the telecom giant owns 50 per cent of LineOne. It seems demand for the service was far higher than expected and some users have been accused of hogging lines and abusing the system. Does this show that flat-fee unmetered Internet access will not work in the UK?

### MEDIA PLAYER 7 LAUNCHES

Windows Media Player 7 is now available for download from [www.microsoft.com/windows/windowsmedia/en/default.asp](http://www.microsoft.com/windows/windowsmedia/en/default.asp). It will also be included in Windows ME when that launches in September. The new version of Media Player supports radio, MP3 players, different skins and provides jukebox features such as a play lists. This compares with RealNetworks' more successful rival products, the separately-available RealPlayer 8.0, RealJukebox 2.0 and RealDownload 4.0.



↑ Pay-per-click on a screen near you?

# BT HYPERLINK GREED VS W3C'S XML INNOVATION

**BT's** share price may have been helped by the news that it plans to collect royalties on the use of hyperlinks from every US ISP, but the company has attracted a barrage of criticism and has been threatened with legal action. After a check through the thousands of patents it holds, BT realised it had a right to the hyperlink technology used on every single Web page – but only in the US. This is similar to when Unisys announced it had the right to the GIF graphic format, and then started to collect royalties from major users. ISPs will argue that they have no responsibility for any pages uploaded to their servers by users.

Meanwhile, the W3C (World Wide Web Consortium) has asked developers to test a specification for adding hyperlinks to XML documents. More information on version 1.0 of the XML Linking Language (XLink) specification can be obtained from [www.w3.org/TR/2000/CR-xlink-20000703](http://www.w3.org/TR/2000/CR-xlink-20000703). This defines how elements can be inserted into XML documents in order to create and describe links between various resources.

At the basic level Xlink allows the creation of HTML-style uni-directional hyperlinks, but it can also create much more sophisticated links.

# BT'S ADSL DELAYED AGAIN

**BT** has been criticised for again delaying the roll-out of its ADSL service. It claims ISPs have not been able to find enough users to trial the system. A BT spokesman told **PC Plus** that the company's ADSL service was being badly represented in the media. He went on to talk about the complexities of the system and how BT is well ahead of its plan to equip major exchanges with the new hardware. Major ISPs are expected to start offering a limited ADSL service from September. But many users will have to wait many months for their exchanges to receive the new equipment. And many may have to wait until next summer when rival suppliers will be allowed to offer their own services from BT exchanges.





↑Who's downloading to your PC today?

## MICROSOFT PLUGS HOLE IN IE SETUP

→Without the patch, PCs could be rendered useless with incorrect CAB files

**M**icrosoft has finally released a patch for a known vulnerability in Internet Explorer 4 and 5's 'Active Setup Download' feature. As it stands, this assumes CAB files coming from Microsoft are 'trusted' and so they get installed without any interaction with the user. And the location of the new CAB file can be specified from the Web site. This means a rogue Web site could deliberately download Microsoft-signed CAB files to any part of a user's PC, possibly rendering it unusable.

A frequently asked questions file

about this matter can be downloaded from [www.microsoft.com/technet/security/bulletin/tq00-042.asp](http://www.microsoft.com/technet/security/bulletin/tq00-042.asp). And the patch can be obtained through the Windows Update procedure or manually from [www.microsoft.com/windows/ie/download/critical/patch8.htm](http://www.microsoft.com/windows/ie/download/critical/patch8.htm).

But in another twist, the patch can only be installed on systems running IE 5.01 or IE 4.01 with Service Pack 2. Users with other versions may be advised that the patch is not required. This information is wrong and Microsoft advises those users to see document Q265258 in its Knowledge Base.

## FAULTY CHIPS IN PALM HAND-HELD

Users of the Palm IIIc, IIIxe and Vx are being warned to check their systems after the company revealed that up to 200,000 of its hand-held devices could contain a faulty chip. The problem occurs because of a defective 8MB DRAM memory chip, but only in models sold between October 1999 and May 2000. If the faulty chip is present, users can experience corruption in information stored on the device – in

calendars, to-do lists and any other user-entered data.

Users who think they may have the problem should visit [www.palm.com/support/dram](http://www.palm.com/support/dram) and then select their model from the list. The serial number will then be requested and the user will find out if they're recommended to run a diagnostic utility. This and any patches can be downloaded from the same site. Palm says the patch solves the problem

with the memory chip and that no hardware change will be required. The company stresses that most Palm hand-helds are not affected by the problem – including all 2MB, 4MB and most 8MB models. It believes that up to 3 per cent of its total sales are affected. But TRG Products, who build Palm-based devices for business use, say that most of its products could be affected. Its Web site is at [www.trgnet.com](http://www.trgnet.com).

## LINUX NEWS

### LINUX THREE TIMES FASTER THAN WIN 2000

In US tests, Linux has been found to be three times faster than Windows 2000 Advanced Server. The Standard Performance Evaluation Corporation said the Windows test concluded with a SPECweb99 score of 1,598, whereas the Red Hat Linux server came in with a score of 4,200. Red Hat was not surprised by the outcome, it said similar tests with Windows NT had also proved that Linux was faster. Find out more at [www.spec.org/osg/web99](http://www.spec.org/osg/web99).

### JAPANESE GIANTS LINK UP FOR LINUX

In a blow to Microsoft, Toshiba and 22 other Japanese electronics companies have agreed to work together on a version of Linux for future digital electronic products. Other members of the consortium include Fujitsu, NEC, Sony, Hitachi and Mitsubishi. These are being joined by two Japanese universities and the Japanese subsidiary of TurboLinux Inc. The consortium expects the new operating system to be used in everything from mobile phones to in-car equipment. There are currently thought to be more than 70 different operating systems in use in digital consumer products.

### MS SPLIT COULD AFFECT LINUX

Analysts at International Data Corporation (IDC) claim any break up of Microsoft could be bad for the Linux market. Small developers could be hit if the company is forced to produce products such as Microsoft Office for Linux. Linux hardware vendors could also be hit, because PC vendors would target Linux without fear of retribution from Microsoft.

## AMD TRIES TO STOP DURON OVER-CLOCKING

Compared with a few years ago, AMD is doing well in its continual battle against Intel. One area in which the two have differed is with over-clocking. Intel's recent chips



↑AMD – no over-clocking on the Duron.

have been multiplier-locked, whereas AMD's have not. Although this might have cost AMD sales of its faster chips, it has made its processors more popular overall. But its new Duron low-cost processor is multiplier-locked, much to the dismay of the over-clockers. AMD's logic is presumably that it doesn't want users achieving Thunderbird performance with a quick hack on the 600, 650 and 750MHz Duron models.

Although it is winning business from Intel, AMD's real gains are going to come from the business sector. There is more money to be made here and the company has to give the right impression. AMD, like Intel, has had some problems with its chips being sold as faster models than they really are. Because of this, the company etches the true speed on to the processor die. Should it worry about upsetting the over-clockers? Not really – especially as its main rival is also multiplier-locking.

## PLUS READERS SLATE BT OVER HYPERLINK CASE

No real surprise – **PC Plus** readers have voted in their droves against BT's plans to claim patent on the hyperlink. BT's plans will certainly have raised a few eyebrows at Apple (whose Hypercard software was a pioneer in developing the hypertext approach) and among readers who can remember the Net's roots in information-sharing academia.

The figures broke down like so:

15% of readers claimed BT had earned it – we'll assume a lack of a grasp of computing history explains it.

16% are against software patents in principle, good news for open sourcers.

6% took the cynical view that BT was right so long as we got to sue it for every broken link in return.

59% took the view it was anti-Web.



## LAPTOPS LEFT IN THE LAP OF THE GODS?

→ Many users take more care of their mobile phones

**F**ollowing some high profile losses of government portable PCs, Mori has carried out a study on the problem on behalf of Compaq. It found that three quarters of the 2,000 respondents did not take any extra precautions to protect their laptop or its data when out of the office.

A third had not changed their password within the last year and 15 per cent used their own name as their

password. It was also revealed that up to 35 per cent did not keep copies of confidential information stored on their portables. And yet half of those surveyed said they felt their laptop was susceptible to theft. But most surprising of all, Mori says more than a third of the users seemed to take more care of their mobile phones. You can get more information from [www.mori.com/polls/2000/compaq1.htm](http://www.mori.com/polls/2000/compaq1.htm).

## ACCOUNTANCY FIRM CLAIMS ABSURD COSTS FOR VIRUS ATTACKS

→ 2.5 per cent of the US GDP goes on clearing up, says firm

From a study for the US-based **Information Week** by PricewaterhouseCoopers, it has been suggested that viruses will be costing the world's businesses \$1.6 trillion this year alone. The study involved 4,900 IT staff from 30 different nations. US companies with more than 1,000 employees (around 50,000 companies in total) are seen as being large enough to be impacted and to accurately calculate the cost. These companies are increasingly keeping records on the true cost of any disruption.

The bill for these US companies for viruses and related disruption is estimated to come to \$266 billion –



✖ Virus writers will be paying for their disruption through more expensive goods and services.

more than 2.5 per cent of the US Gross Domestic Product. The report concluded that viruses cause more disruption than most people realise. High profile attacks from the likes of Melissa and the Love

Bug are now making businesses re-assess their network security. In our view, this figure smacks as one of those silly 'costs' that are easily recovered and have little real bottom-line impact.

### INTERNET NEWS

#### DOT BANK AND DOT SHOP ON THE NET

The Internet Corporation for Assigned Names and Numbers (ICANN) has paved the way for new top level domains to be added to the Internet – the first since the 1980s. Now, established top level domains such as COM, ORG and NET could be joined by more descriptive names such as SHOP, TRAVEL and BANK.

#### KAK WORM CONTINUES TO INFECT

The Kak Worm and its variants continue to cause problems for Outlook users. This is one of the few viruses that infects PCs without an attachment having to be run. The worm takes advantage of incorrect security markings on ActiveX controls in Internet Explorer and its code runs as soon as an infected message is displayed on-screen. Microsoft produced a patch for this problem almost a year ago. It terms this issue the 'scriptlet.type1ib/eyedog' problem and the patch and further information can be obtained from [www.microsoft.com/technet/security/bulletin/ms99-032.asp](http://www.microsoft.com/technet/security/bulletin/ms99-032.asp).

#### TAX TROUBLES

The Inland Revenue has shelved plans to offer a downloadable tax form for the current year, following technical difficulties. And because of problems with its internal systems, data entered by users into the Web version of the self assessment forms is being printed off and then re-keyed by Inland Revenue staff. With various penalties applied for delays or errors on the part of the taxpayer, it remains to be seen what will happen if errors are introduced during the re-keying exercise. If you want to take part, try [www.inlandrevenue.gov.uk/e-tax/index.htm](http://www.inlandrevenue.gov.uk/e-tax/index.htm).

## SEPTEMBER-OCTOBER 2000 UPCOMING EVENTS

→ Get yourself to this month's computing and IT events

Date **3-5 September**  
Event **European Computer Trade Show**  
Venue **Olympia**  
Contact [www.ects.com](http://www.ects.com)

Date **6-7 September**  
Event **Application Integration – Making E-business Work**  
Venue **Royal Lancaster Hotel, London**  
Contact [www.gartner.com/events/](http://www.gartner.com/events/)

Date **12-14 September**  
Event **Financial Management Software Solutions**  
Venue **Radisson SAS Portman, London**  
Contact [www.fmss.co.uk](http://www.fmss.co.uk)

Date **21-24 September**  
Event **Live – Consumer Electronics Show**  
Venue **Earls Court**  
Contact [www.live2000.com](http://www.live2000.com)

Date **26 September**  
Event **Using the Web for Business 2000**  
Venue **Sheraton Grand Hotel, Edinburgh**  
Contact [www.wfb.uk.com](http://www.wfb.uk.com)

Date **26-27 September**  
Event **Business Systems Show**  
Venue **G-MEX Centre, Manchester**  
Contact **07000 464 336**

Date **4-5 October**  
Event **Softworld in Accounting & Finance**  
Venue **NEC Birmingham**  
Contact [www.softworld.com](http://www.softworld.com)

Date **10-11 October**  
Event **Linux Expo 2000**  
Venue **Olympia 2, London**  
Contact [www.itevents.co.uk](http://www.itevents.co.uk)

Date **10-11 October**  
Event **Toonz (The Developing World of 2D and 3D Animation)**  
Venue **Crowne Plaza, London**  
Contact [www.access-conf.com](http://www.access-conf.com)

Date **18-19 October**  
Event **Internet World Scotland 2000**  
Venue **The Scottish Exhibition Centre, Glasgow**  
Contact [www.internetworld.co.uk](http://www.internetworld.co.uk)

Date **24 October**  
Event **Using the 'webforbusiness' 2000**  
Venue **The Renaissance Hotel, Manchester**  
Contact [www.wfb.uk.com](http://www.wfb.uk.com)

Date **24-25 October**  
Event **Financial Management Software Solutions**  
Venue **Renaissance Hotel, Manchester**  
Contact [www.fmss.co.uk](http://www.fmss.co.uk)

Readers are advised to pre-register and check with organisers

## C++ Workshop

# Windows registry made easy...



**Dave Jewell** forces his files to hand themselves over to the correct applications

**I**sn't it amazing that, after all this time, Microsoft still doesn't provide decent 'out of the box' support for the common graphical file formats that are kicking around? Just the other day, I installed a late beta of Windows ME over the top of a carefully-tweaked version of Windows 98. From then on, whenever I clicked on a .GIF file, .PCX file or whatever, the operating system fired up the brain-dead SHIMGVW.DLL image-support code – the shell image viewer. This software doesn't let you do any more than view an image, rotate it in 90°

**PC Plus Super Disc** PATH: \prog\files\cpp

increments, or print it, and it even manages to make some image types (for example, PCX) look mangled when viewing at actual size! Terrific. It was a far cry from the capable Paint Shop Pro editor which Windows ME had thoughtfully disconnected from all my favourite file formats.

This month and next, I'll be describing a simple little C++ Builder application which demonstrates how to regain control of your file associations. Call me old-fashioned, but as far as I'm concerned it's my desktop, my PC and Microsoft doesn't have the right to ride roughshod over whatever file associations I've set up! **PCP**



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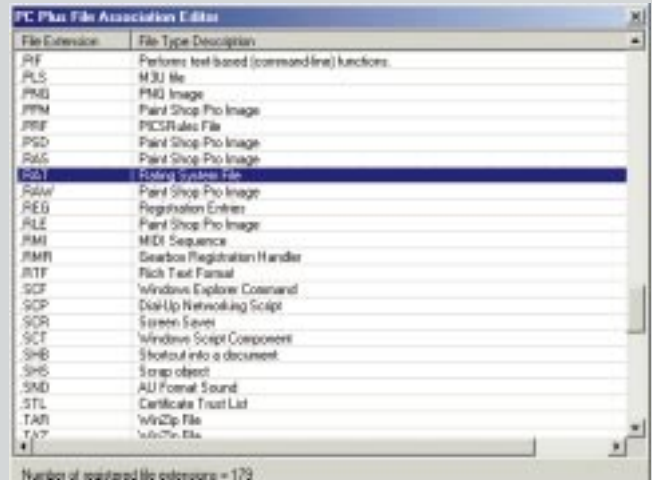
**PC Plus**

**NEXT MONTH**

Creating reloadable registry snapshots

## → A File Association Editor in action

How to use C++ to plough the depths of the Windows Registry



↑ Here's the File Association Editor in action. This program enables you to quickly delete or edit an existing file association in Windows 95, 98 or NT.

**Y**ou can see the aforementioned program running in the screenshot. I've called it the **PC Plus File Association Editor**. As ever, complete source code is included on this month's **SuperDisc**. When you run the program, the main view area will immediately fill with a list of all the file associations on your PC. In the left hand column you can see the file extension, and in the right hand column you'll see the corresponding file description that's stored in the Windows registry.

To use this program, let's assume that you've just installed Windows ME, Internet Explorer or something else that's comprehensively trampled all over your favourite file associations in the Windows registry. The simplest approach is to just select a particular file extension and then hit the Del key to delete it. This will remove that particular association altogether, meaning that next time you double-click a file of that type, Windows will ask what you want to do with it and give you the chance to set the file association back the way you want it.

The File Association Editor will also allow you to directly edit a file association entry for yourself. To do this, double-click an entry or else select it and click the Edit this entry... button. This will bring up a smaller dialog window where you can type in the exact 'command string' that you want to use. If you've already got (for example) JPG files associated with your favourite image editing program and you want to do the same with (say) BMP files, an easy approach is to just copy the command string from the JPG file association entry and paste it into that for the BMP file extension.

Okay, I realise that some applications already contain facilities for managing the file extensions they're interested in – Paint Shop Pro 6.0 will do this, for example. I also realise that it's possible to manipulate file associations from Windows Explorer using the File Types page of the Folder Options menu. The real point of this month's **MasterClass** is to show you, the programmer, how to manipulate file association information entry for yourself so that when you create your next killer app, you can write code which restores file associations that have been stamped on by the folks from Redmond. That way, the end-user doesn't have to start messing around with file associations (or worse, the Regedit utility!) which is the last thing we want.

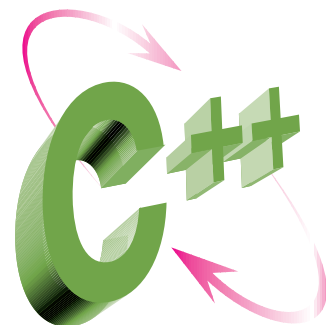
### How it works...

Okay, enough preamble; let's see how the program works. The most important chunk of code inside the File Association Editor is the initialisation code in the **FormCreate** routine. For space reasons, I haven't listed all the code in this month's **Code Corner**, but the most important part of the routine is contained in the **FormCreate** code snippet. **SysReg** is a **TRegIniFile** object that's used to read and edit the various entries in the system registry; once it's been initialised we call the **ReadSections** routine to read all the registry keys from the **HKEY\_CLASSES\_ROOT** area. (See **Inside the Windows Registry** to understand what's happening here).

Once we've got this list of keys, the code walks through the entire list, searching for any key names which begin with a period – that is, file associations. If found, the corresponding internal key name and file format description strings are read from the registry. If all this checks out ok, the command string is also retrieved. All this information gets plugged into a **TListItem** which is added to the list view box.

**Tip:** When storing data in a **TListItem**, you can store more data than is actually displayed. In this example, the command string associated with each file extension is stored in the list view, but never shown in the list view itself.

As mentioned earlier, there are two ways to delete a file association. You can either





select an item in the list view and then click the Del key, or else you can just press the Delete this entry... button. In the former case, the ListView1KeyDown event handler gets called. This checks to see if the user pressed Del (this keystroke corresponds to a key-code of VK\_DELETE) and if so, calls the KillEntryClick routine. Notice that KillEntryClick is the event handler for the Delete this entry... button – and that's another tip for you; C++ Builder will enable you to call a button's event handler routine just as if that button had been clicked, and this can often be used to prevent unnecessary duplication of program code in different places.

The KillEntryClick routine itself is shown in the Code Corner. It begins by retrieving a pointer to the selected item in the list view control. Next, it asks if you're sure you want to delete the specified association. This program is a lot friendlier than RegEdit, but it's still possible to make a mistake, and putting a confirmation dialog into an application like this is always a good idea!

If the user replies Yes to the dialog, then the EraseSection method is called twice, once to remove all the registry key information under the internal name (see Inside the Windows Registry) and again to remove the top level file extension key. Finally, the relevant entry is deleted from the list view control and the file association count display is updated.

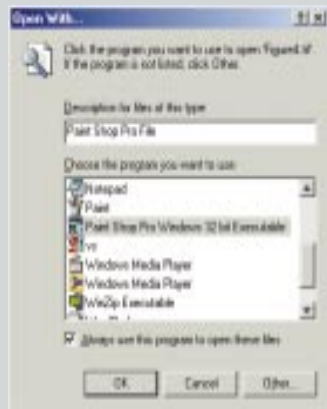
As an aside, perhaps you raised an eyebrow when reading that quirky-looking call to the MessageDlg routine? I expect you're wondering what that weird TMsgDlgButtons call is doing, and what those <> operators are for? As you undoubtedly realise, the VCL application framework used by C++ Builder was originally written using Delphi Pascal. The third parameter to the MessageDlg routine is actually a Pascal set. Unfortunately, however, the barefoot C++ language doesn't understand the concept of sets, although it does have some other stuff that Delphi Pascal lacks, such as multiple inheritance.

In order to get around this problem, the folks from Borland came up with a novel syntax which enables you to generate a Pascal set from inside C++ code. The TMsgDlgButtons() construction introduces an empty set of type TMsgDlgButtons, and then the <> operators are used to add individual items to the set. Thus, the code in my example is equivalent to the following Delphi Pascal code:

```
if MessageDlg ('Are you sure you want to delete
associations for '' + Item.Caption + ''?',
mtConfirmation, [mbYes, mbNo] = mrYes then begin
```

Arguably, the Delphi Pascal code is a bit neater, but once you're used to the C++ way of creating sets, there's really not much difference.

Handy though the File Association Editor is, wouldn't it be great if you could somehow take a 'snapshot' of all your file extensions, install some new Microsoft package and then add the snapshot back into the registry, forcing Windows to leave all your favourite file associations the way you want them? Stay tuned for next month's C++ MasterClass.



↑ Windows Explorer provides some facilities for editing file associations, but your program will be a lot more professional if you give it the ability to acquire file associations for itself.

## Code Corner

### → FormCreate

```
SysReg->ReadSections (SubKeys);
for (Idx = 0; Idx < SubKeys->Count; Idx++) {
    CurSubKeyName = UpperCase (SubKeys->Strings [Idx]);
    if (CurSubKeyName [1] == '.') {
        Str = SysReg->ReadString (CurSubKeyName, "", "");
        if (Str != "") {
            Desc = SysReg->ReadString (Str, "", "");
            if (Desc != "") {
                Str = SysReg->ReadString (Str +
                    "\\shell\\open\\command", "", "");
                if (Str != "") {
                    // Create a new list item
                    Item = ListView1->Items->Add();
                    Item->Caption = CurSubKeyName;
                    Item->SubItems->Add (Desc);
                    Item->SubItems->Add (Str);
                }
            }
        }
    }
}
```

### → KillEntryClick

```
void __fastcall
TForm1::KillEntryClick(TObject *Sender)
{
    TListItem * Item = ListView1->Selected;
    if (MessageDlg("Are you sure you want to delete
associations for '" + Item->Caption + "'",
mtConfirmation, TMsgDlgButtons() << mbYes << mbNo,
0) == mrYes) {
        SysReg->EraseSection (SysReg->ReadString (Item->Caption, "", ""));
        SysReg->EraseSection (Item->Caption);
        ListView1->Items->Delete (Item->Index);
        ExtCount->Caption = "Number of
registered file
extensions = " +
        IntToStr (ListView1->Items->Count);
        ListView1->Selected = ListView1->TopItem;
    }
}
```

**FORUM** [www.pcplus.co.uk/forums/cpp](http://www.pcplus.co.uk/forums/cpp)

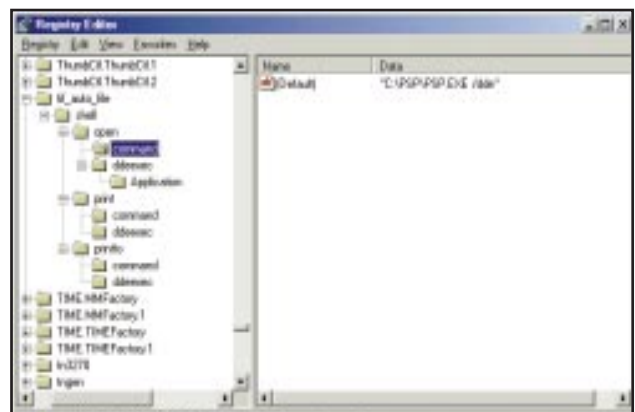
## → Inside the Windows Registry...

### How to use the most important sub-key in the Windows registry

File associations are stored inside the Windows registry underneath the HKEY\_CLASSES\_ROOT key. If you run Regedit, and look under this key, you'll see a large number of sub-keys, many of which have a period at the beginning of their names. These are the keys that represent file extensions in the registry.

If you expand one of these sub-keys, you'll see that it includes a default string which gives the internal name for the file format. Thus, if you click on the .png graphical file sub-key,

you'll see that it has an internal name of pngfile. If you now look up the internal name below the HKEY\_CLASSES\_ROOT key, you'll find that this time the sub-key's default string contains the human readable description of the file format, such as 'PNG Image'. The sub-key also includes another sub-key, 'shell/open/command' which provides the all-important command string that's used to associate a particular document type with a particular application.



↑ The most important part of a file association is the shell/open/command sub-key in the Windows registry. This controls which program actually gets executed when a particular document type is double-clicked from Explorer, or opened from within another application.

## Delphi Workshop

# Handling mixed objects

Huw Collingbourne's adventure game gets a touch of class

If you've been following **Delphi Workshop** over the past couple of months you may have been surprised to find that writing an

adventure game isn't exactly child's play! From the very outset, I decided that my game would be strictly object orientated. To this end, we have already created a

class hierarchy of moderate complexity, including multiple object constructors and virtual methods.

In last month's project, I began work on the tricky process of saving and restoring lists of objects – or, to be more precise, getting the objects to save and restore themselves by 'serialising' their data to and from streams of bytes. But last month's saving routine was really a bit of a cheat because the order in which objects were written to disk was 'hard-wired' into the program code. This had the advantage of making it simple to reconstruct those objects in the same sequence in which they were saved. But it had the disadvantage that it would not work in a program in which the order of objects is not fixed.

In an adventure game, the order of objects changes during the course of playing. This is because the player will pick up objects in one room, take them to some other room, and drop them

**PCPlus SUPER DISC** PATH: \prog1files\delphi

there. When the game is saved, the objects will be in a different (and unpredictable) order from when the game was loaded. When we try to restore a game from disk, our code has to be able to work out which type of object needs to be read in at any given moment prior to creating that object and initialising its fields with the saved data.

This would be a tough task even if we had to deal with a single list of consecutive objects. In fact, a game is composed of a branching network of objects. The top-level object is the Map. The Map contains a sequence of Room objects. Each Room may contain zero or more treasure objects. At least one Room will also contain an object representing the game-player. The Player object may itself contain a list of objects – the treasures that the player has collected. How on earth are we going to save and restore such a complicated data structure? **PCP**



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**PCPlus**  
**NEXT MONTH**  
Embedding descriptions inside objects

## → Class war

Last month's project contains a clue to solving this problem. When each object wrote its data on to a stream, it started out by writing the name of its class:

```
cn := self.classname;
fs.WriteBuffer( cn, sizeof(cn));
```

I wrote this code specifically in order to simplify the process of restoring objects. When my program restores the objects from a saved game, the first piece of data it reads back is the class name, cn. This tells it which type of object it needs to construct.

The first step we need to take towards achieving this goal is to decide on a class type for the Map object. This will be at the outer-level of the object network so it needs to be able to contain lists of objects of arbitrary types. The obvious candidate for this is Delphi's TList class. Load up the wombatbeta.dpr project. You will see that the variable, aMap is declared at a TList in the wombatmainbeta unit.

The map is created and filled with RoomOb objects in the CreateObBtnClick() method. This is done using TList's Create constructor and its add() method as follows:

```
aMap := TList.Create;
aMap.add( RoomOb.Create( 'Room0', 'A dank cavern', NOEXIT,
2, NOEXIT, 1 ));
```

Notice that the argument to the add() method is an 'anonymous' RoomOb object. By that I mean that a RoomOb is created using its own Create constructor and it is simultaneously added to the TList object, aMap. But the RoomOb is never assigned to a variable since that isn't necessary.

If we ever need to refer to this RoomOb we can do so using its index in the Items property of aMap. For example, aMap.Items[0] refers to the first item. Each new RoomOb is added to the end of the aMap list so we can use the Last method to add objects to that room in this way:

```
with RoomOb(aMap.Last) do
begin
  addThing( ThingOb.Create('Bit of Fluff', 'A sticky fluffy ball' ));
  addThing( ThingOb.Create('Popcorn', 'An inedible lump' ));
  addThing( ThingOb.Create('Coin', 'A threepenny bit' ));
end;
```

I now need to find somewhere to code the saving and restoring routines. In last month's project, I put these into the default main unit, so they became methods of TForm1. This is clearly inelegant. I really want these to be generic routines that can be reused rather than having them bundled up inside the code of the application's visual interface.

I have therefore decided to create a game-implementation class to take care of the behind-the-scenes mechanics required to operate the game. I have called this class Implementer. In this project, I have declared an Implementer variable named Imp. As with any other object, this must be specifically created. I have done this in the main unit's initialization section:

```
Imp := Implementer.Create;
```

To save or load a game you just have to execute this object's SaveGame and LoadGame methods:

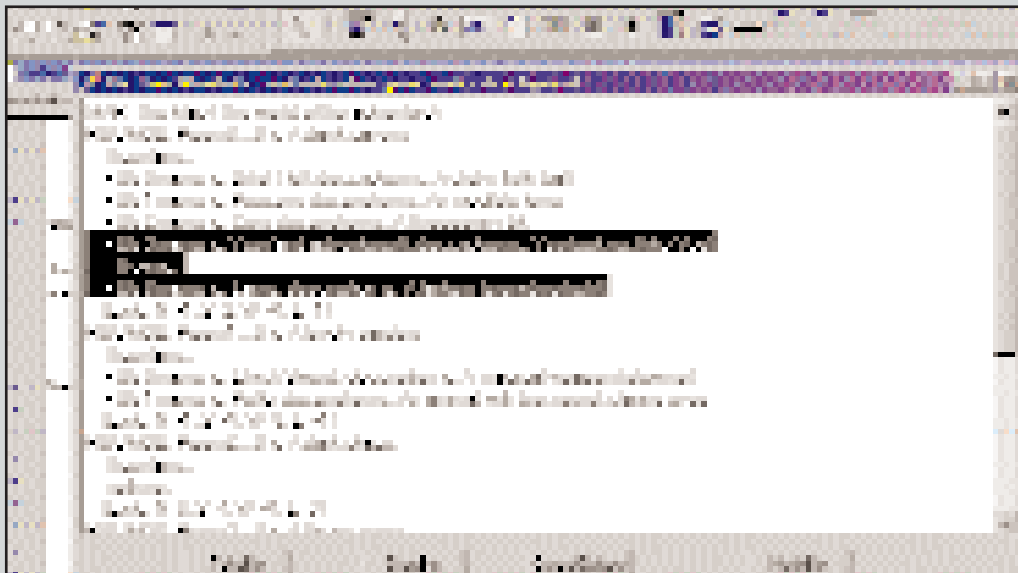
```
Imp.SaveGame(aMap, TESTFILE);
Imp.LoadGame(aMap, TESTFILE);
```

Turn to the advocs unit. You will find that the implementation of SaveGame is fairly straightforward. As in last month's project, it simply asks each object in turn to write itself to a stream. The LoadGame method is a bit more complicated. It does not know which object types it needs to recreate so it calls another method, addAnObject, to do the dirty work. The addAnObject method reads the saved class name and then explicitly calls the appropriate constructor:

```
fs.ReadBuffer( cn, sizeof( cn ) );
if cn = 'ThingOb' then
  aMap.add( ThingOb.CreateFromStream( fs ) )
// ... and so on
```

This is all very well, as far as it goes. But this method only restores the 'outer layer' of the game. It does not automatically restore lists contained by other objects. That is handled in the ReadFromStream method of ThingHolderOb. You can see that ThingHolderOb.ReadFromStream duplicates much of the code in Implementer. AddAnObject.

As a general rule, code duplication is not a good thing. But, how can I avoid this? The real problem here is that while all my own object types know how to save and load their data, the Delphi TList which is used for the map, does not.



◀ My main objective this month is to add to my game objects such as a Map and Player which can contain other objects and save them to disk.

## Map reading

The solution is obvious. Get rid of that TList and replace it with one of my own classes. I have already created the ThingHolderOb to maintain lists of objects. A Map is, in essence, a thing-holder – it 'holds' a list of Rooms. Load up wombatbeta2.dpr. You'll see that now I have changed the aMap from a TList to a ThingHolderOb. The map-creation routine has been rewritten accordingly:

```
aMap := ThingHolderOb.Create('The Map', 'The world of the
adventure' );
aMap.addThing( RoomOb.Create( 'Room0', 'A dank cavern',
NOEXIT, 2, NOEXIT, 1 ) );
```

This greatly simplifies the code needed to save and restore a game. Indeed, I have been able to get rid of the addAnObject method altogether. The main work of Implementer.LoadGame is now accomplished by asking the map variable to read itself from the file stream, fs:

```
aMap.ReadFromStream( fs );
```

This is not just simpler than the previous way, but it also avoids code duplication. Now all we need to do is add a player – an object that can move around the rooms in the map and mess around with our nice, neat lists of objects. Load up wombat3beta.dpr. You'll see that this introduces an object named Player which is an instance of the ActorOb class. So what is an ActorOb? Turn to the advobs3 unit to find out.

You probably won't be surprised to discover that, in common with RoomOb, an ActorOb is a descendant of ThingHolderOb. After all, the player of the game is really just like a room (it can contain things) but without exits. The other difference is that a player is mobile – it can move from one location to another. I haven't yet implemented movement. However, in defining the ActorOb class, I have had to decide on a strategy for this feature to ensure that it will be easy to implement later on.

There are several possibilities. One obvious way would be to make the Player the main or 'outer' object of the game and to give it a field to contain the game map. It could then move itself from one room to another as required. The trouble with this is that if the Player

'owned' the map object, it would limit the game to a maximum of one player. But what if I wanted to make this a multi-player game? Or what if I want to have other characters that can move around the map and interact with the player?

In the end, I decided to treat the player and any other characters as actors in my drama. You could think of them as being like the pieces in a chess game. The implementer will direct their actions and move them around the map just as a chess player would move the pieces around on the board. In this way, each ActorOb object is given no special knowledge of the layout of the map through which it is moved – just as a real person would have no knowledge of a maze through which he or she is walking. This seems logical. But it seems equally logical that each ActorOb object should know something about the room which they currently occupy. This would then allow us to add an ActorOb.Describe method, for example, to return a description from the point of view of the 'observer'.

In the present version of the game, I've given ActorOb a private integer variable, roomnum. This can be set by the Implementer to the map index of the current room whenever the ActorOb is moved. Alternatively, you could give ActorOb a RoomOb variable to reference the actual RoomOb itself. You may want to try this yourself.

## Next stages

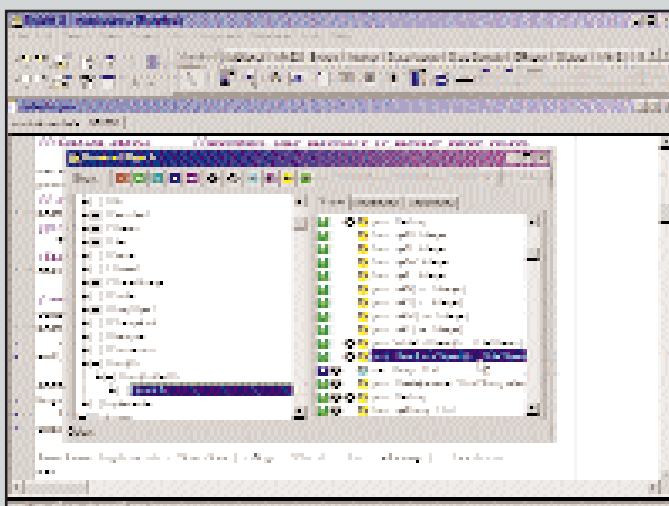
There is still more to be done before we have a fully working adventure game framework. The next step is obviously to implement routines to move the Player or other ActorOb objects. I also need to code routine to let the Player take and drop objects. And while I'm about it, I would also like to get rid of all the complicated code inside the CheckObBtnClick method which displays the names and descriptions of objects.

The time has come, I think, to give each object the ability to describe itself. We'll be tackling some of these tasks in next month's **Delphi Workshop**.

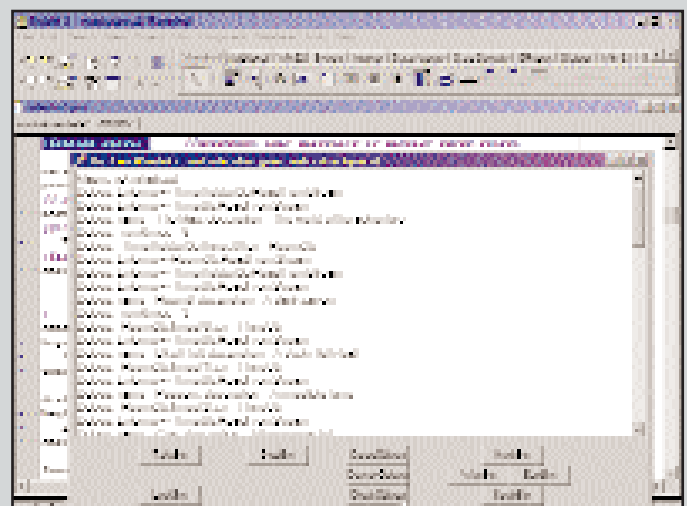
We're thinking about running a back-to-basics programming series. What do you think? What language would you like to see covered? If you have any suggestions, please e-mail [pcplus.handson@futurenet.co.uk](mailto:pcplus.handson@futurenet.co.uk).



[www.pcplus.co.uk/forums/delphi](http://www.pcplus.co.uk/forums/delphi)



↑ The class hierarchy in this month's adventure game is becoming quite complex. Remember that you can use Delphi's Object Browser to keep track of it.



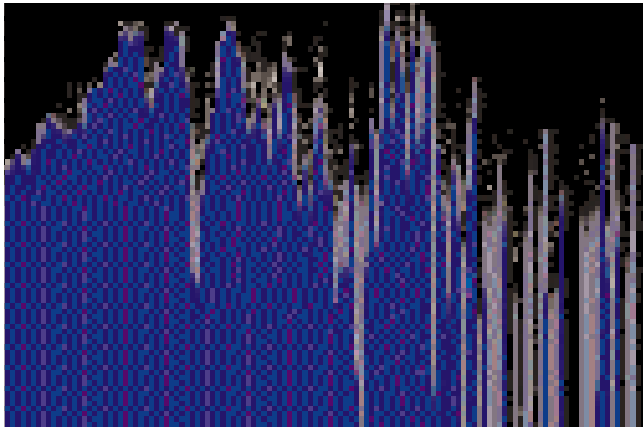
↑ To see more information on the data being read from streams when objects are constructed, uncomment the [\$DEFINE DEBUG] directive in the advobs unit.



# Make some Java music!



**David Griffiths** looks at `javax.sound.*`, the new, expanded sound support in Java 2



↑ Sound comes in many formats, especially in the sense of digital music. This month we tackle MIDI.

**R**ecently I had to set up an NT machine which, for someone who has willingly undergone several years of Sun Microsystems brain-washing, is an experience a little bit like wearing knitted woollen underwear: possible to do, but not recommended.

The one thing that made life bearable for that afternoon was a small program that turned the hulking beast into something useful: a guitar simulator.

With the door locked, I spent the afternoon belting out my own cover versions of *Smoke on the Water*, *Stairway to Heaven* and *The Three Little Fishes* (ah – Frankie Howard, how we miss you...).

This rather fruitful afternoon caused me to look in more detail at the latest release of Java 2 (JDK 1.3), which has greatly expanded support for sound in general and MIDI in particular.

Sun now says that the Java Sound API is part of 'core' Java. This

**PCPlus** **SUPER DISC** PATH: `|proglfiles|java`

doesn't mean that it has added it to the main `java.*` packages: it can't because not all Java platforms will support sound.

Instead, Java Sound is now included in a Java extension called `javax.sound.*`.

Previously, the sound support in Java was pretty minimal. It was possible to load up sound samples recorded in Sun's own 8-bit .au format and then either play them straight or loop them. The new packages go much further. **PCP**

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**PCPlus**  
**NEXT MONTH**  
We'll get on to the more complex topic of digital sound sampling in Java

## → A quick tour around `javax.sound.*`

There are two main ways of recording sound: either as a digital sample, or as an audio sequence

A digital sample takes the wave-form of a particular sound and converts it into a sequence of numbers. Each number will refer to the height of the wave at that point in the sequence. If we use 8-bit numbers in our sample then up to 256 levels can be stored. This will be fine for samples of human speech, but for high-quality musical storage 16-bits is the minimum.

Java Sound now supports 16-bit digital sound, at up to 48,000 samples per second. If that sounds impressive, then remember that it's what your PC's been able to do for about the last ten years. As well as the old .au format, Java Sound can now also handle Windows WAV and Macintosh AIF files.

There is currently no direct support for MP3 (although it does support BeatNik's RMF format, which can include MP3 samples), but hopefully this will follow shortly, as well as a Java implementation of the even newer and even more impressive MPEG4 format.

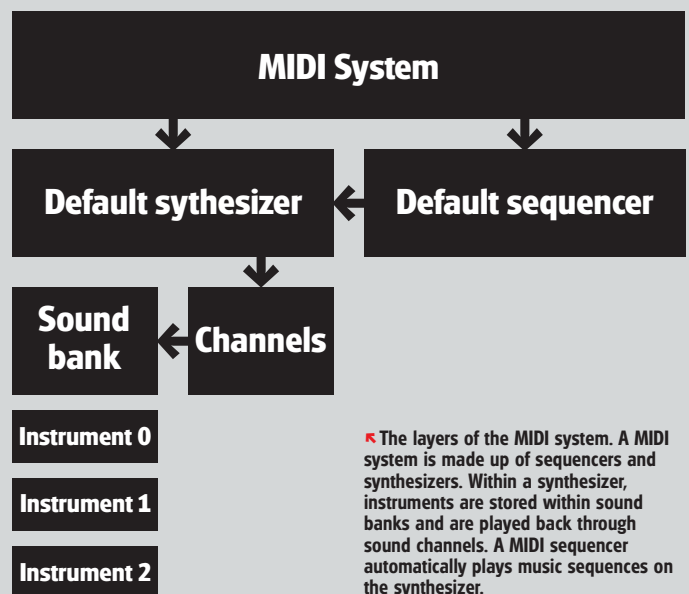
As well as simply playing and looping sound samples, JDK 1.3 also lets you record and process them. We will be covering more about digital sampling in the next **Java Workshop**. The other way of storing sound is as an audio sequence, such as in the 'Musical Instrument Digital Interface' (MIDI) format.

In a MIDI system, the basic sounds (pianos, guitars, nose-flutes and so on) are already sampled and stored away in a library: most probably located in a memory chip on your sound card.

A MIDI sequence works like a musical score, specifying which instrument should play which note and when. This makes MIDI files far smaller than sound samples, but the music sounds much more artificial. It also means they can't be used to record speech.

The good thing about MIDI is that there is already a large library of sounds to play with, and the `javax.sound` packages makes the 'playing' exercise a lot easier.

### The structure of a MIDI system



A MIDI system is made up of a series of devices. A device may correspond to a physical entity, such as a set of chips on your sound card, or it may simply be a layer of software. The main route into MIDI sound is via the `MidiSystem` class. This class corresponds to the physical MIDI system sitting in the sound card of your PC. Because it's a physical thing, you can't create new `MidiSystems` with:

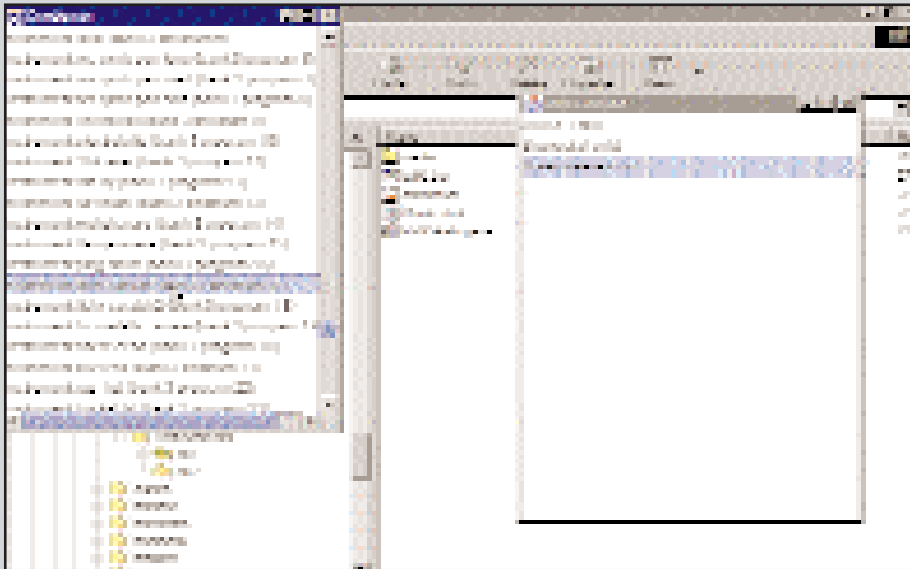
```
MidiSystem midiSystem = new MidiSystem();
```

The Java designers prevent that happening by giving the `MidiSystem()` class a private constructor. The `MidiSystem` class can give you important information about the MIDI devices installed on your system. The following:

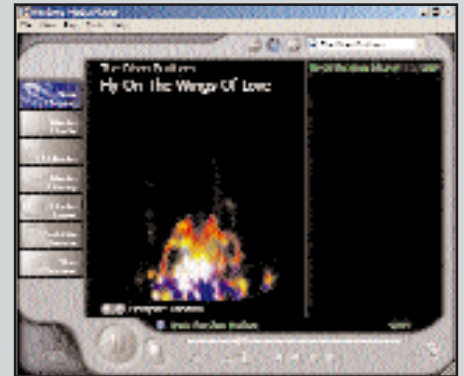
```
MidiDevice.Info[] mdi = MidiSystem.getMidiDeviceInfo();
```

This returns an array of device information structures that is specific to your machine. Calls to the `getName()`, `getVendor()`, `getDescription()` and `getVersion()` methods of these objects will provide you with a complete description of each one.

MIDI devices work just like any other device driver on your system. They may correspond to a physical card installed in your PC, or they may simply be an interface to



← This month's **Workshop** shows you how to play MIDI files and access MIDI instruments using JDK1.3's new `javax.sound.*` extension. Here we are adding some much needed itchy-scratch to Greensleeves. Hmm... funky.



↑ With the media player getting ever bigger and more bloated, you now have a trim midi controller that you can adjust to suit your needs.

other device drivers (just as you may have a 'file system' device installed on your PC that is simply an interface to a hard disk device driver).

MIDI devices fall into one of two categories: synthesizers and sequencers. Synthesizers provide sets or 'banks' of sounds that resemble real instruments; sequencers arrange these sounds into pieces of music. If you list out the device information with:

```
for (int i = 0; i < mdi.length; i++)
    System.out.println(" " + mdi[i]);
```

you should find the first couple of devices are the Java Sound Synthesizer and Java Sound Sequencer: these are the default synthesizer and sequencer. After that, there will be a list of devices specific to your sound system. The Java Sound synthesizer and sequencer are 'fronts' for the other devices. By always having these two virtual devices present it is possible to program MIDI on machines with very different hardware configurations.

## The default sequencer

A sequencer works like the conductor of an orchestra, coordinating all of the different instruments in accordance with a musical score. In our case, the musical score is a MIDI file. Again, because there is only one default sequencer in the system, you can't create it, but you can get a handle to it with:

```
sequencer = MidiSystem.getSequencer();
```

Just as a conductor can't make a sound without an orchestra, so our sequencer is unable to do anything unless it is connected to the sounds provided by the synthesizer. In order to do this, it needs to be opened with:

```
sequencer.open();
```

This code needs to be wrapped up in try/catch calls in case a 'MidiUnavailableException' is thrown. If you look in the first example in the workshop files (MidiCatalog) on the **SuperDisc**, you will see this code in action.

It would be inefficient to retrieve and open the sequencer for every instance of the class, so we've separated this code out into a 'static' method so that just a single Sequencer object will be created that can be used by all instances.

Once the MIDI sequencer is open, we need to pass it the musical score wrapped up in an object called a sequence. Sequences are generally stored within .mid files and they come in three forms. Type 0 sequences are the simplest. They contain just one track of music and a single tempo. They are very small MIDI files and usually contain music for a solo instrument. Type 1 sequences contain multiple tracks of music, but they will all run in time with a single tempo. These are the most common MIDI files. Type 2 sequences are much rarer. They enable multiple tracks of music, as well as multiple time signatures. Java Sound does not currently support this sequence type.

MIDI sequences are based on files, and they can be created within Java using:

```
seq = MidiSystem.getSequence([a file object])
```

This statement can throw two types of exception: `InvalidMidiDataException` (corrupt MIDI file) and a standard `IOException` (unable to read the file). If your program ever throws a 'InvalidMidiDataException' it may be because you're trying to use a type 2 MIDI sequence. The sequence is now passed to the sequencer with:

```
sequencer.setSequence(seq);
```

You can start and stop the MIDI sequencer with `sequencer.start()` and `sequencer.stop()`. In the example, program a subdirectory containing MIDI files is listed out in a popup window, which will start to play when they are selected.

## The default synthesizer

The other type of device in a MIDI system is the synthesizer. A synthesizer contains a sequence of output channels that are like the musicians in the orchestra. The more channels you use, the more instruments you can play at once. Instruments are sometimes referred to as timbres, and they are collected together into groups called 'banks'. Within a bank, a timbre will have a program number. The act of connecting a timbre to a channel is called 'patching'. This harks back to the days of analogue synthesizers when timbres were connected up using patch leads. Getting hold of the default synthesizer in Java is similar to retrieving the default sequencer:

```
synthesizer = MidiSystem.getSynthesizer();
```

Again, because there is only one default synthesizer, it is a good idea to put this in a static[...] method so that all your objects can use the same one. We can retrieve the channels with:

```
midiChannels = synthesizer.getChannels();
```

Likewise, we can get at the available instruments with:

```
instruments = synthesizer.getAvailableInstruments();
```

In order to allocate an instrument to a channel, we need to find its program number. The program is part of the instrument's patch and so it is retrieved with:

```
instruments[i].getPatch().getProgram()
```

If this value is passed to the 'programChange(...)' method of a channel it will allocate the instrument to it. Wrapping all this up into a single line of code you get:

```
midiChannels[j].programChange(
    instruments[i].getPatch().getProgram()
);
```

This puts instrument *i* on to channel *j*.

As well as assigning instruments to channels, you can also play around with the way the sound is produced. Just as a pianist can alter the way they strike the keys and use the pedals, so the `MidiChannel` class comes with a plethora of sound modification methods. These include `setPitchBlend(...)`, `setPolyPressure(...)`, `setMute(...)` and so on.

Finally, we need to play the note. This is done with `noteOn(...)` and `noteOff(...)`. The `noteOn(noteNo, pressure)` accepts a note number from 0 to 127 and a pressure value. The pressure controls the volume of the note, in the same way that the pressure you apply to a piano's key controls affects the volume of the notes it produces. To play middle C at a reasonable pressure the code would be:

```
midiChannels[j].noteOn(60, 64)
```

In the second example, program a list of available instruments are displayed and, when they are selected, you will hear this piece of code playing middle C on the instrument.

For some instruments, such as trumpets, the note will play continuously until the `noteOff(...)` call and then it will quickly fade. Others, like pianos, will start to fade out as soon as the note is played. You can switch off all notes with `midiChannel[j].allNotesOff()`, or deaden the sound completely with `midiChannel[j].allSoundOff()`. That's just a quick overview of the MIDI part of `javax.sound.*`.



[www.pcplus.co.uk/forums/java](http://www.pcplus.co.uk/forums/java)

## Discover Perl: FINAL PART

# A simple Web search engine

Leaving the theory behind, **Charlie Stross** turns his attention to writing a module that 'does something'



PATH: \prog\files\perl



**L**ast month, we wibbled on about how object oriented programming works in Perl and demonstrated a simple module. This month, it's time to do something useful – like provide an extensible tool that can search for regular expressions in an archive of HTML files on an Apache Web server, or any other server that understands CGI.

Note that this search tool doesn't index the site; it reads each file in turn and applies Perl's regular expression matcher to them. So it is not suitable for large repositories of data, or sites that are whacked on a lot. On the other hand, it doesn't have the space overhead of index files, and you never have to worry about the index being out of date; on my test bed (a Celeron 366 system with an old-ish IDE hard drive, running Linux) it was able to scan a directory tree containing 400-odd files and 6MB of text in under five seconds, suggesting that it's fine for low-to-medium traffic personal Web sites.

If you need something more robust, you can either try and add indexing to this system, or investigate tools like Perfect Search.



perfect.com

In order to make the search tool more portable, we separated out the components that search the filesystem from the components that present data to the user. The former are wrapped up in a module called Site::Index, while the latter is built into a CGI script that uses Site::Index. In

principle the CGI script can be replaced with any other program that needs to search HTML – say, a Perl/Tk graphical utility.)

Note: the module name Site::Index is unofficial – we chose it without referring to the CPAN maintainers. There is no guarantee that it will not tread on the toes of some other module's namespace, because this isn't a formal CPAN submission. If you have installed modules with the Site:: prefix already, you may want to rename this module! If you plan to write a module and upload it to CPAN, you should check with the moderators before settling on a name. Details at [www.perl.com](http://www.perl.com) the Perl Web site at /CPAN-local/misc/cpan-faq.html.

## Making an installable module

Perl uses a module called the MakeMaker to generate those Makefile.PL scripts you see in all the CPAN modules. To create a Makefile.PL file for distributing a module, however, you run h2xs – a program which is distributed with Perl that is officially intended to provide glue between Perl and C source code.

We created Site::Index's package like this:

```
[charlie@host]$ h2xs -X -n
Site::Index
Writing Site/Index/Index.pm
Writing Site/Index/Makefile.PL
Writing Site/Index/test.pl
Writing Site/Index/Changes
Writing Site/Index/MANIFEST
[charlie@host]$
```

In the directory Site/Index (which h2xs just created) is a file called MANIFEST. We removed test.pl and replaced it with search.cgi, added files called License and read.me, then updated MANIFEST. (MakeMaker figures out what to add to the Makefile it builds by checking in MANIFEST. All files in the distribution need to be named there.)

Next, we edited Index.pm and grafted in the code we had already written and tested. (You can do it the other way round, too – build the skeleton module then modify it.)

Finally, we built the tar.gz archive, by chdir'ing out of Site/Index, and archiving up the directory tree.

To install the module, you follow the usual procedure: unpack it, cd into Site/Index, then run perl Makefile.PL. This builds a Makefile. You next run make to process the makefile, with the optional parameter install (as in: make install) to install everything.

There is no test script with this module: the easiest way to test it is to copy search.cgi into your Web server's cgi-bin directory, make it executable, configure it (see **Parsing HTML using HTML::Tokenizer**), and run it. However, MakeMaker enables you to define an extensive test suite for your module. There's a standard test harness (described in the perl documentation for Test::Harness). When you run make test, a MakeMaker generated Makefile will run test.pl, if present. It also runs any files in a directory called 't' in your module directory. These files

should be perl programs distinguished by the file suffix '.t', that print the string 'ok N' (where N is an integer number) to standard output if they run successfully. You can put code to test out various features of your module in these files, and it will be executed when make test is run. If any files fail, the user will get some indication that there's a problem before they start trying to build perl programs that use your module.

## How the CGI script works

Before you can use this tool, you will need to install two modules from CPAN; CGI.pm – the general-purpose CGI module – and HTML::Tokenizer. This is part of the HTML-Parser-3.08 distribution, written by Gisle Aas – the standard Perl HTML parsing library.

Note also that some aspects of the search script (notably the use of the qr{}, quote-regex, operator) require features of the latest release of Perl – version 5.6.

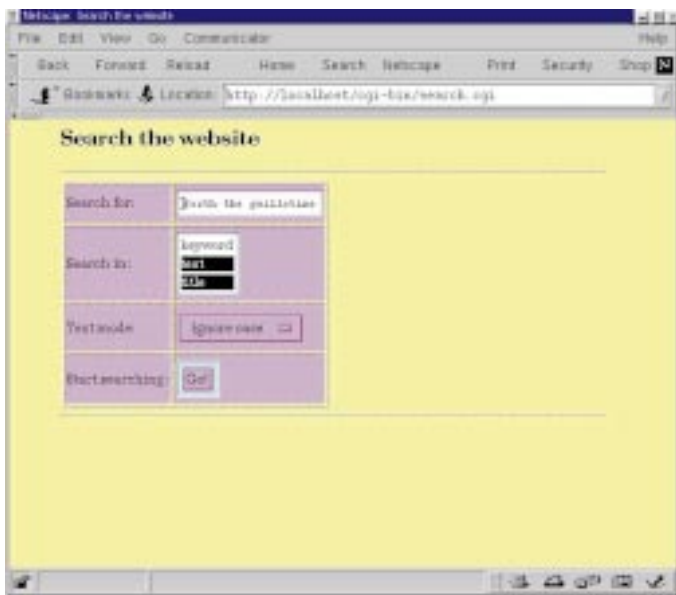
The CGI script is structured similarly to the mail feedback form in **PC Plus 165**. When it runs, it creates a CGI object. If the CGI object contains a parameter called live, it knows that it has run once before and should process form parameters and carry out a search – this is accomplished in the subroutine do\_form(). If no parameters are present, it prints out a form (print\_form()) containing the hidden parameter live with a value of 1.

When do\_form() is invoked, the script creates a new object of class Site::Index. Data passed in CGI parameters in the CGI object are used





[www.pcplus.co.uk/forums/perl](http://www.pcplus.co.uk/forums/perl)



↑ Our form (contained in a table for ease of use and legibility, obviously we're excluding the colour scheme there) was produced by `print_form()`.



↑ When you send the form to the script and execute the search, after a brief pause a set of results similar to those above will be generated automatically. The appearance can be customised if required.

to configure the `Site::Index` object. Then we call `search()`. This causes the `Site::Index` object to begin a search, and return an array of results.

A search hit isn't simply a filename (as returned by the UNIX tool `grep`), but a hashref containing various additional information, such as the number of matches in the file, the file's last modification time, the title text of the file, and some context surrounding the first hit. Without this information, our search system is going to look pretty poor.

When we have some results, we use `CGI.pm`'s HTML-rendering facilities to print them up neatly, formatting them with a hyperlink to the file in question.

## How the `Site::Index` module works

The usage of `Site::Index` is described in the module itself – run `perldoc Site::Index` to see the manual. We embedded the documentation in `Index.pm` using POD, Perl's literate programming system; run `perldoc`

`perldoc` for an explanation of how to use POD.

To start with, we made a simplifying assumption: that we have a starting URL, and a starting directory, and that the one maps on to the other. Let's say we start with `http://localhost/fred/`, and `/home/html/fred`. We look through all the files and directories under `/home/html/fred`, and if we find a hit in `home/html/fred/foo/bar.html`, we assume that the URL for it is `http://localhost/foo/bar.html`. This

isn't always the case on complex Web farms, but for most sites it'll do.

The configurable parameters are set in an object of type `Site::Index` by using an `AUTOLOAD` method. This useful subroutine handles any method call for which no defined method can be found. The one in `Site::Index` lets us set/get scalar variables with names defined in the hash tags, and lets us set/get arrays as well in those tags defined as being of type array.

Rather than re-invent the wheel, we use the standard Perl module `File::Find` to traverse the directory tree. When the method `search()` is called, this triggers the `find()` subroutine from `File::Find`. This descends the directory tree, calling `process()` on everything it finds. If `process()` sees what it thinks is a suitable file, it calls `scan_text()` or `scan_html()` on it to look for hits; if any are found, it returns a reference to the record returned by the scanner.

In principle we can add XML or RTF support to `Site::Index` by modifying `process()` to recognise those file types and invoke a separate scanner routine on them; or we could do this by defining a child class of `Site::Index` that extends `process()` and adds an extra scanner.

All we need to do now, to invoke a scanner is pass it three arguments (the current object, a filehandle, and a target regular expression), and we expect it to return a hashref pointing to a hit record in a standard format. **PCP**



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## → Parsing HTML using HTML::Tokenizer Parser

It's probably the most tricky bit, but we show you how to make it easy

Probably the most incomprehensible bit of the whole `Site::Index` system is the subroutine `scan_html()`. `scan_html()` is complicated because it invokes an HTML parser, enabling us to search in different sections of a structured document – only in the header or title, for example, or the keywords, or everywhere in the body text except the title or keywords.

Why use an HTML parser? Well, suppose we want to search for a phrase like, "bring forth the guillotine!". A straight regular expression search in Perl will find the literal text in a plain

text file. But HTML contains markup information: what if the file we're searching contains "bring forth the <B>guillotine</B>!" instead? Obviously, a naive text search will sometimes fail in structured text – so we get around the problem by parsing the text from the HTML file into a buffer.

`HTML::Tokenizer` requires a filehandle. When you prod the `Tokenizer` object using the `get_token()` method, it regurgitates the next HTML token it has read from the file – this could be plain text or it could be a start tag, an end tag or something else. The tokens are actually arrayrefs containing additional information about the content and structure of the token that's been read.

`parse_html()` creates a `Tokenizer` object, then repeatedly calls `get_token()` on it until it runs out of tokens to read. It hands the tokens to a loop that first processes start tags (which might be the start of a `<TITLE>` or `<H1>` or `<META>` tag), then processes plain runs of text. In each instance, what it does with the text is governed by the state of a flag (for example, it only checks for a match in `<TITLE>` tag text if we've set the `title()`

attribute of our `Site::Index` object to a non-zero value).

When processing a start tag, we get at the contents of the tag by calling `get_trimmed_text()`, which returns everything up to the next tag – we specify that this should be the end of the current tag by passing it a closing tag as a parameter.

In an ideal world we'd actually store everything on a stack and call the parser recursively whenever we hit a tag, but this job isn't about elegance, it's about looking for text matches, as fast as possible, while consuming as little system resources as possible. A recursive-descendant parser in Perl gobbles memory – there's an overhead of at least 32 bytes for every single zero-content hash, and if we're using hashes to represent HTML elements, that's a lot of memory gone!

At the end of the parsing run, if `scan_html()` has detected one or more hits, it builds a record containing information about the file and returns it. And when the record propagates up to `process()`, it gets added to the list stored in the `hits()` attribute of our object.

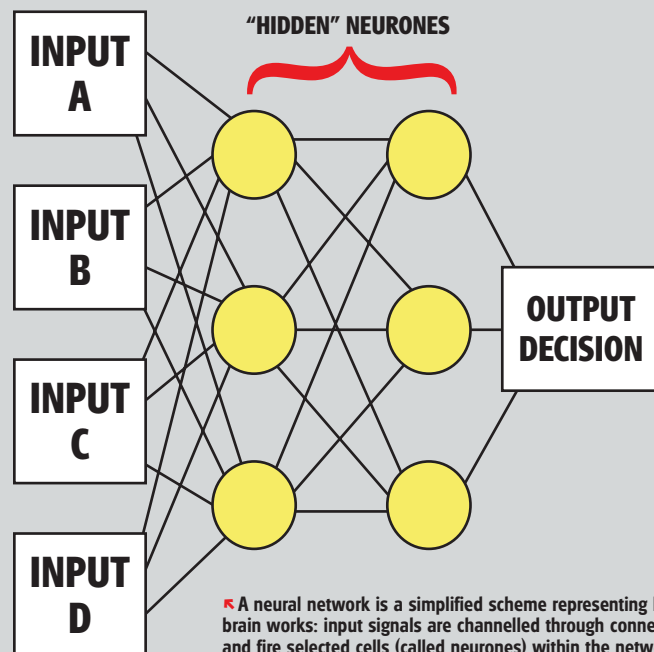


## WILF'S WORKSHOP

**Wilf Hey** expands on last month's workshop and shows you how to build your own neural net



# Your first neural net



◀ A neural network is a simplified scheme representing how a brain works: input signals are channelled through connections and fire selected cells (called neurones) within the network itself. The power of this configuration is in the connections rather than in the number of neurones.

**L**ast issue we looked at the workings of a simple neural network – a device you can build on your own PC that works in simple ways as a model of the brain. It is like a program in that it can perform certain chores. For example, it is good at making decisions about input and classifying objects according to some scheme. But it is fundamentally different from the run-of-the-mill program; it learns its chores primarily from experience. The chore we assigned to our simple neural network was to identify which of the numbers from 1 to 15 are prime, and which are not.

The neural network is more than a plaything. Ours is only useful as an illustration – it does a task that can be done more easily by a table lookup. Besides, our net only learned its job by being presented with the answers over and over until it matched them in its own workings. As we left it last month, it was not perfect, even then.



**PATH:** \prog\wilf.htm

However, a practical neural network would be more complex (that is, larger) and be assigned a more useful task – for example, character recognition or analysis of nuclear particle tracks in an accelerator, or traffic flow monitoring. Yes, it would learn 'on the job' as it were, but it would not have quite the same concrete goals we provided for our mini-net. When you test the decisions of a character recognition net for example, you cannot give it all the possibilities. Suppose we had a larger neural network and tried to get it to recognise the prime numbers from one to one billion. We could gauge its progress by testing it with several random numbers repeatedly, but it would (probably) be impracticable to give it a thorough test each time.

The genius of a neural net is that it governs behaviour rather than raw facts: in essence, it turns facts into behaviour. We did not, at any point, 'explain' to our neural

network program the definition of a prime number. Instead, we simply gave it plenty of examples and insisted it try to duplicate the process. It is rather tempting to think that the human brain stores its memory of facts in individual cells, or at least in groups of cells. This idea says that somewhere there is a spot in the brain that knows that the Battle of Hastings occurred in 1066. Now think of the brain as a structure similar to a neural network, in that the cells (neurones) are highly interconnected (axons). Now which cell holds that historical fact? For that matter, where is any fact encapsulated in this model? The amazing conclusion is that you could say that any fact is all over in the network, and nowhere in particular. The Battle of Hastings may involve the firing or non-firing of many thousands of individual neurones that are interconnected. Change any of the connections, or remove any of the neurones, and the fact itself may be subtly modified or even forgotten.

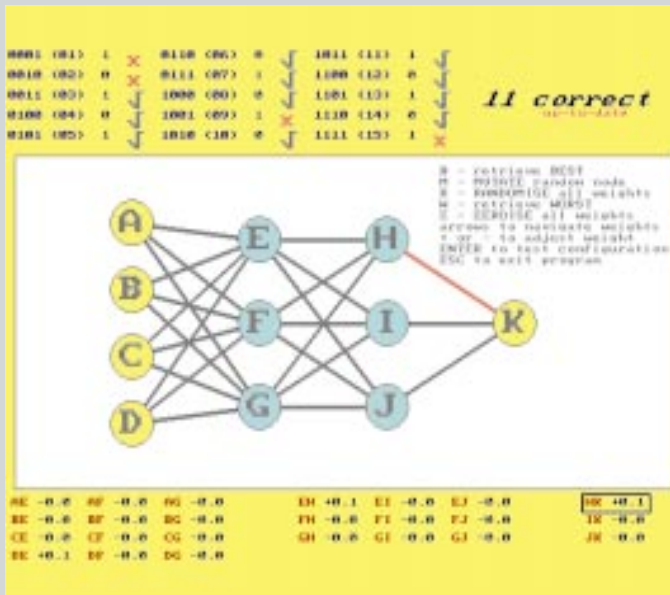
We can understand some of the workings of a neural network by adjusting weights in our miniature net and analysing the results. See the **An idiot neural net** box for details of the program that enables us to adjust these weights.

For example, you know that all odd numbers have the zero bit 'on' when represented in binary form. In our model, the zero bit is labelled [D]. Then set the weight of the connections DE to +0.1; EH to +0.1 and HK to +0.1, leaving all others as -0.0. When you press ENTER to

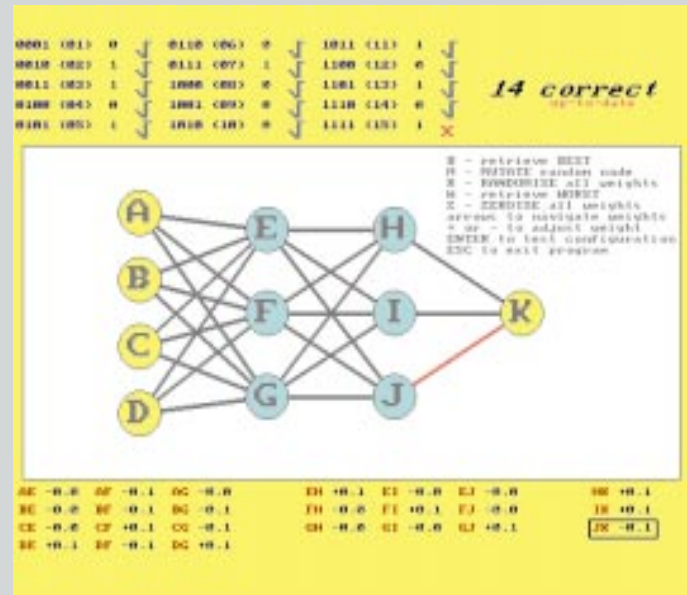
update the results, you will see that the net now correctly identifies which of the fifteen possible input numbers are odd (you will have to disregard the checkmarks, which measure primality rather than odd-and-evenness).

You have now used node 'H' for determining whether the input number is odd. Another thing you may observe about prime numbers is that no even number except two is prime. Using node 'I', is there a way to test for this? You bet! If you set AF, BF and DF connection weights to -0.1 and CF to +0.1 the net, when run, will fire the F node only when C is on alone (the input bit 1). When any of the other three bits is on, F will be passed a negative current, so will not fire. In effect, when F is on, this means that the input number must have been 2. Now set the weight on connection FI to +0.1, and on IK to +0.1. While you do this, move to HK and make it -0.0, and then press ENTER. Look at the results, and you will see that the net now gives a one when the input is the number two, and zero at all other times. Set HK back to +0.1, press ENTER, and you will see that the answer at K is now one for odd numbers and for two, and zero for all else; this is not bad, for it answers the 'Is n prime?' question correctly 12 times out of 15.

We are still getting it wrong for the numbers one, nine and fifteen (none of them prime). We can deal with one and nine together, because they both have the binary pattern X001 (where X means 'I don't care'). If we put a weight of

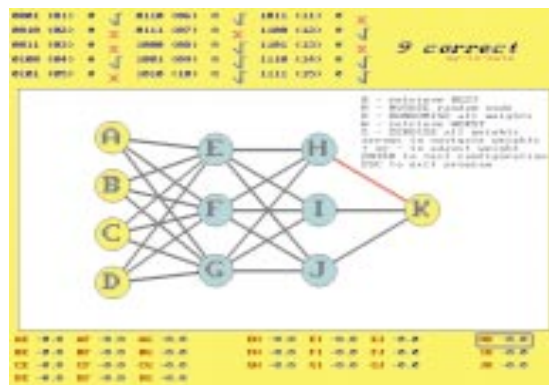


↑ With only three connections (DE, EH and HK in this case) you can program the neural net to distinguish between odd and even numbers. This solution only uses the neurones we have tagged H and K.



↑ Combining tactics, we can program the neural net to note odd numbers (at neurone G), the exception 'two' (at neurone H), and the further exceptions '1' and '9' (at neurone I). This results in a not-quite-perfect net, able to recognise 14 cases out of 15. But we can do better – and without human effort.

## → An Idiot Neural Net



↑ When there are no connections between neurones, the neural net always answers no (or zero). Fortunately, this is the correct answer to "Is this a prime number?" nine times out of the fifteen possible tests. How can a neural net better itself?

The simple neural network that we discussed last month consists of just four input signals and six neurones – or brain cells – interconnected as two banks of three. This is all that is available to produce a single yes or no answer to the question "Is n a prime number?" (where n is a number between 1 and 15, represented in binary by the four inputs). It starts off knowing nothing – but even giving no as the answer all the time, it gets 9 answers out of 15 correct.

I have produced a program in QBasic that represents the workings of this neural network. QBasic is a DOS program provided free with Windows: you can execute it in a DOS box, or (if you have Windows 95 or 98) straight from within Windows.

If you do not have QBasic on your PC, you can install it from the original Windows CD-ROM, where you will find it as: [I:\TOOLS\OLDMSDOS\QBasic.EXE].

Much of the code included in this program

will be familiar to long-time visitors to the Workshop: it includes my PIECRUST code, that gives a QBasic programmer access to such services as high-power sorting, directory navigation, extra colours, mouse handling, and buttons.

In this program, I use in particular ziPublish to provide easier graphics. The logic of the program, though, can be adapted to many other languages, whether in the DOS or Windows environment.

The program NEURAL.BAS displays the whole miniature network as seen in the picture at the start of the article, and enables you to modify the weights of any of the 24 connections between input, neurones and output, and then test the network to see the effect of your modifications.

You can run it directly from a command line by entering [QBasic /RUN NEURAL], although you may have to specify the directories where QBasic and NEURAL reside.

+0.1 on DG and a weight of -0.1 on BG and CG, we will produce a negative result in G for anything with the pattern X11X (zero counts as negative, you will note); otherwise XXX1 is positive. The net result is that numbers one and nine fire the neurone at G. If you now set GJ to +0.1 and JK to -0.1, you will be able to make these two numbers an exception to the rule that made all odd numbers fire neurone H (and thence K). Press ENTER, and you will find that these three tactics combine together to get it right 14 times out of 15.

However, using these three rules we find we need a fourth, to exclude the number fifteen from being judged as prime. But we have used all three of the neurones on the first hidden level; there is no

room for further rules. We may look for some subtle way of combining some of the rules, like we did with the numbers one and nine, but what if this proves too difficult?

It happens that if you think of the weights on the connections as genes, we can use simple genetics to try to improve on a solution.

What you have to do is create a primordial soup of neural net settings, as if each neural net itself existed as an individual. You then impose reproduction laws similar to the way nature does (natural selection – good results tend to persist) and set free the individual 'chromosomes' so that they reproduce, mixing and recombining their genes. In each generation, the best solutions are favoured by surviving into the next cycle. Those

found wanting – the less impressive solutions – die.

On the **SuperDisc** I have included POPULATE.BAS – in many respects even simpler than NEURAL.BAS itself. This program takes several possible network settings (I think of these weights as the personalities of a network), marries the top achievers among them, and generates children from each marriage, each representing a random mix of the genes of each parent. Then the whole population – children and adults – are tested, and the worst ones do not survive into the next generation.

It is amazing how quickly better solutions develop. POPULATE is a quick-and-dirty program: you can alter it in many ways and study how various factors affect this little

model of evolution – or more properly, in-breeding. In the continuation of this article on the **SuperDisc**, we look in further detail at this program, and discuss other factors affecting neural nets. And I will reveal a home-grown neural net found by POPULATE that scores perfectly on the primality test. **PCP**

## Write in!

→ I'm always pleased to receive letters and e-mail with programming queries, ideas and opinions. As a strict rule I can't reply directly with personal one-to-one programming advice, but your input could form the basis of a future Workshop. You can e-mail me at [whew@pcpmag.co.uk](mailto:whew@pcpmag.co.uk). Fax to 01225 732295 or write to Wilf's Workshop, PC Plus, Future Publishing, 30 Monmouth Street, Bath BA1 2BW.



## Discovering XML: PART FOUR

# How to construct database apps



**Dermot Hogan**  
uses XML to create  
a mailing list

**C**ost you, gov', the plumber says, shaking his head. You stare at the flood of water round your feet. What can happen with taps can also happen with databases. After running the database repair utility, you may feel that there's a striking similarity somewhere with the proverbial plumber. And the database backup? The one you meant to do last night? Oh well...

One of the nice things about XML is that you can open an XML file with a text editor and see exactly what's in there – and fix it pretty easily as well. In contrast, with something like Access it can be virtually impossible to fix a corrupt database file without using the database program itself. You really have to use the backup... the one you forgot to do, naturally.

There are downsides to using XML as a database: it's not relational, there are no indexes, and there's nothing like the Visual Basic Data control or data bound fields to help you. But, for a simple database application there's a lot to recommend XML. This month, we'll look at how you can use XML as the database component for this application.



PATH: \prog\files\vb

For a basic mailing list program, all that's really required is a table of names and corresponding e-mail addresses. You can, of course, literally use a table of names and addresses but, if you use XML, you at least have some assurance that what you think is a name really is a name: XML has a well defined structure and XML tools generally have some inbuilt error checking. In effect, XML gives a half-way house between a simple text file and a fully structured binary database file. **PCP**



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**PCPlus**

**NEXT MONTH**

We'll be looking at embedding a browser as a control and how Visual Basic can be used to build Web-enabled applications using ActiveX documents

## → XML file structure

The structure of the XML file we'll use is based on a 'recipient'

Our recipient in this example is someone who receives a newsletter:

```
<RECIPIENT>
  <NAME>Fred Bloggs</NAME>
  <EMAIL>abc@xyz.com</EMAIL>
</RECIPIENT>
```

If you want, you can add other items and attributes, such as joining date, mailing date, interests and so on.

In the original program, we developed a Visual Basic class, 'Customer', to hold the necessary name and e-mail address. With the XML version, you don't need to do this because an XML node (IXMLDOMNode) will do the job nicely. The first thing is to replace the original ReadCustomers procedure (which read data from a text file into a Collection of Customers) with one that reads XML:

```
Set recipients = New DOMDocument
r = recipients.Load(App.Path & "\recipients.xml")
```

The first thing to note is that this is a lot shorter (and simpler) than trying to mess around with a text file and a collection of class objects. The 'Load' method of the DOMDocument object opens the XML file, parses it and sets the object up with an XML tree. If it's successful, 'Load' returns 'True', otherwise you can check the error state by using an IXMLDOMParseError object:

```
If r = False Then
  Set error = recipients.parseError
  MsgBox "Can't open database: " & error.reason
End
End If
```

You can save the entire document by simply using the Save method:

```
recipients.Save (App.Path & "\recipients.xml")
```

### Adding a recipient

Now let's move on to adding a new recipient. To do this, we have to do two things: The first is to construct some new XML nodes representing our new mailing name and address; the second is to add them into the XML tree. The key to doing this is the 'createElement' method of the DOMDocument object (the XML tree itself). You create new XML nodes like this:

```
Set x = recipients.createElement("RECIPIENT")
Set y = recipients.createElement("NAME")
Set z = recipients.createElement("EMAIL")
```

You then set the XML data directly from the Add form's edit controls:

```
y.Text = xName.Text
z.Text = xAddress.Text
```

Then you 'glue' the NAME and EMAIL XML nodes on to the RECIPIENT node using 'appendChild':

```
Set y = x.appendChild(y)
Set z = x.appendChild(z)
```

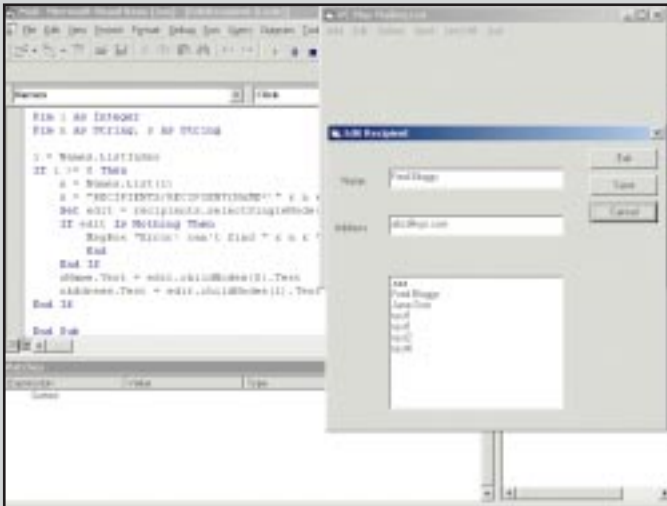
Last, you attach the new and complete RECIPIENT node, 'x', to the XML tree. There's a wrinkle here: You can't just use recipients.appendChild because the child will be a root node of the XML document and an XML node may only have one root node. One way round this is to use the documentElement property of the DOMDocument object. This returns a reference to the root node – you can then use appendChild on this:

```
Set root = recipients.documentElement
Set x = root.appendChild(x)
```

It's desirable to check if the new recipient exists in the XML tree. Otherwise, when you come to do a mail out, some unlucky subscriber will get multiple copies of your masterwork. The way to do this is to search the XML tree using the XSL syntax we've described in the last two **Visual Basic Workshops**:

```
s = "/RECIPIENTS/RECIPIENT[NAME=' "
& xName.Text & "']"
Set x = recipients.selectSingleNode(s)
```

This searches the XML at the RECIPIENTS/RECIPIENT level for all NAMES with the same name as the input text box. If the returned node is Nothing then all is well, otherwise there's a duplicate.



↑ An old favourite returns... but there's no longer any Access database. It's all been replaced by a combination of XML and XSL. Surprisingly, it's just about as easy-to-use as well.

## Moving things around

There are several circumstances when you might wish to display the contents of the XML tree plainly in a list box. The simplest approach is to iterate through the child nodes of the document root. First, get the document root as before:

```
Set root = recipients.documentElement
For i = 0 To root.childNodes.length - 1
    Names.AddItem
    (root.childNodes.Item(i).childNodes.Item(0).Text)
Next
```

Then iterate down the 'childNodes' collection. We've picked out the NAME XML node directly by selecting the zeroth item of the next level. This is quite permissible, but it does require you to have a good idea of where you (more precisely, the code) is at in the XML tree – and this can get quite tricky on a complex tree. Another, equivalent but slower, way of doing this is to return a collection:

```
Set nodelist = recipients.selectNodes("//NAME")
For Each x In nodelist
    Names.AddItem (x.Text)
Next
```

Note that we've used an abbreviated search expression. We could equally have used /RECIPIENTS/RECIPIENT/NAME to the same effect. As you can see, there's often more than one way to skin the XML cat!

Removing a node from the XML tree is easily done via the removeNode method. First, you have to find the node – just a standard search:

```
s = "RECIPIENTS/RECIPIENT[NAME='" & n & "'" & "]"
Set x = recipients.selectSingleNode(s)
Set y = x.parentNode
Set x = y.removeChild(x)
```

Next, you have to do something a little peculiar. Instead of telling the node to delete itself, you have to find the parent node of the victim in the tree (using parentNode) and tell it to remove the unwanted child node. Strange, but true...

Editing a name and sending a message are pretty simple tasks. All you need to remember is that when you search the XML tree, the result is a RECIPIENT node. The easiest way to get at the name and e-mail address is then to use the childNodes collection. The NAME is the zeroth element of the collection and the EMAIL is the next:

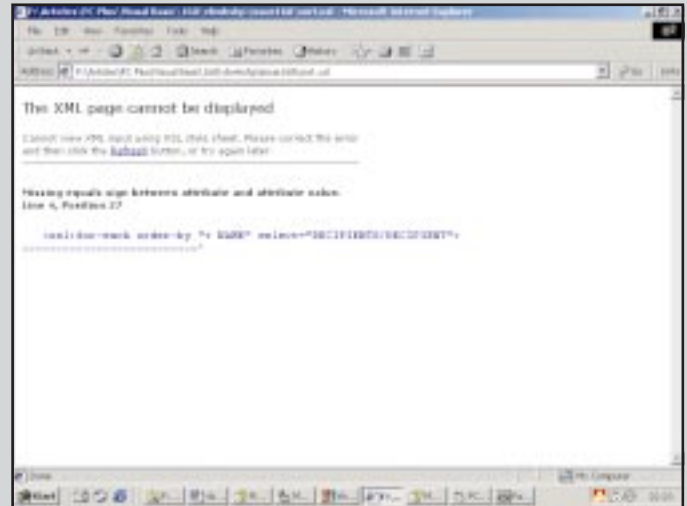
```
xName.Text = edit.childNodes(0).Text
xAddress.Text = edit.childNodes(1).Text
```

Be careful if you edit the XML file by hand, though. The XML loader treats both:

```
<RECIPIENT>
<NAME>Fred Bloggs</NAME>
<EMAIL>abc@xyz.com</EMAIL>
</RECIPIENT>
```

and:

```
<RECIPIENT>
<EMAIL>abc@xyz.com</EMAIL>
<NAME>Fred Bloggs</NAME>
</RECIPIENT>
```



↑ A quick way of debugging XSL style sheets (and XML files) is to use Internet Explorer (version 5 is best). If there's a problem, you can get the error text and line number quickly and fix the problem.

as valid XML. But the order of EMAIL and NAME in the tree will be reversed and the program must reflect this.

## Sorting XML

One of the things that's missing from Visual Basic is a simple sorted collection. You can put things into a Collection easily enough, but to get them out in a specified order is quite difficult. There isn't anything like the C qsort or quick sort code which enables you to order a sequence with a specified sort algorithm. I'll return to Visual Basic sorting and queuing problems in a future Materclass, but here the problem is how to get a sorted XML tree. For the mail out program, it's easy not to bother sorting the XML at all, but simply to sort any list box or combo box that's used to display the data.

However, it would still be nice to be able to sort an XML tree in a general manner. The key to this lies in the ability of XSL to transform one XML tree into another. And it turns out that the designers of XSL have thoughtfully provided a way to sort the source XML tree as part of the transformation. Here's the program code for this:

```
unsorted.Load(App.Path & "\recipients.xml")
xsl.Load(App.Path & "\sort.xsl")
Call unsorted.transformNodeToObject(xsl, recipients)
```

The first line loads the unsorted XML file, the next loads the XSL transformation style sheet while the third line uses the transformNodeToObject to apply the XSL style sheet to the unsorted XML tree, placing the results in recipients for use later in our program.

The XSL style sheet sort.xsl needs some explanation. In fact, it can be downright confusing at first sight. Leaving out the standard XSL verbiage, here it is:

```
<RECIPIENTS>
<xsl:for-each order-by="+ NAME"
select="RECIPIENTS/RECIPIENT">
<RECIPIENT>
<NAME><xsl:value-of select="NAME"/></NAME>
<EMAIL><xsl:value-of select="EMAIL"/></EMAIL>
</RECIPIENT>
</xsl:for-each>
</RECIPIENTS>
```

The trick to working out what's going on is to remember that the XSL processor simply spits out any text that's not an XSL directive. So, the first line would be (if it really was going to a file) <RECIPIENTS>. The second line is a real XSL directive: It selects each RECIPIENT node in the unsorted source XML file and executes the text between the <xsl:for-each> and </xsl:for-each>. So, for every input RECIPIENT node, the XML text <RECIPIENT> ... </RECIPIENT> is output. And as the middle lines (<NAME>...</NAME> and <EMAIL>...</EMAIL>) are traversed, a further XSL directive emits values of the XML node in question as specified by the <xsl:value-of> instruction. The effect is that the output of the style sheet is, with one small exception, identical to the input XML file.

Of course, the exception is the order-by clause, which tells the XSL processor to sort the input XML nodes in ascending NAME order. You can sort descending EMAIL, for example, by using - EMAIL. Finally, the output doesn't go to a file – it's put in the recipient's DOMDocument object.





# Huw Collingbourne

**Forget the airy promises made for the Internet economy – making it work is going to be about simple practicalities, reckons Huw**

**Y**ou have a problem with a company. You want to contact the managing director. But how do you get through?

The answer is simple: e-mail. I'll explain how it's done in a moment. But first, a digression...

I was up to my armpits in manure the other day when it suddenly occurred to me that the real money in the dot-com revolution is not going to be made by Internet companies. It's going to be made by delivery services. After all, every order placed online has to be delivered by someone with a van.

I have good reason to be concerned about this. When not writing for **PC Plus**, I run a small horticultural business (hence the manure). I am, therefore, in the same position as any other business on the Net. I, too, have to get my goods delivered to my customers (and that's an even bigger pile of manure, but I'll come to that later).

In my innocence I decided that, instead of one of those newfangled courier services, I'd trust the good, old, familiar Post Office. That was the start of

my woes. I had just taken an order from a customer in Sweden. I took my carefully packaged box of plants along to the local Post Office. The box weighed 2.5Kg and I was advised that the Parcelforce Standard International delivery was just what I needed. The plants should be delivered within four to six days and the price included £150 compensation for loss or damage. The postage was expensive at almost £18 but it sounded as though the service was first class so worth every penny.

By chance, I had also taken an order from another customer in Sweden that same week. This package weighed just under 2Kg and I was told that it could go by 'small package' mail. This is much cheaper than Parcelforce – costing less than £8. All the same, I was worried. The service didn't seem to assure the same care and attention as the Parcelforce one. In the end, my greed won out. I sent it by the cheaper service anyhow.

Three days later, I was delighted to know that the plants sent by the cheap service had arrived safe and sound. Ten days later, I was less delighted to hear that the plants sent by the expensive Parcelforce service had not been seen since.

## Brute force

I rang the Parcelforce customer help line. They said they'd get back to me when they'd made enquiries. I said "Great. And by the way, how about some compensation?"

"No can do," they said, "You see, Sweden doesn't allow plants to be sent into the country so you should never have sent them in the first place, so we certainly can't give you any compensation."

Sweden doesn't allow plants into the country? Well, blow me! That was the first I'd heard of it. I rang the Swedish Embassy. "Sweden doesn't allow plants to be sent into the country?" a spokesperson asked, "Well blow me! That's the first we've heard of it!"

I rang the European Commission Information Offices in London. They'd never heard of it either. They advised me to check with the Department of Trade and Industry. The DTI said they'd never

heard of it but suggested I check with MAFF, the Ministry of Agriculture Food and Fisheries. MAFF said that not only had they never heard of Sweden restricting importation of plants but that, according to European law, they could not impose such a restriction even if they wanted to.

"In other words," I said, "Parcelforce is making this up!" The man from the MAFF did not contradict this assertion.

I rang the Parcelforce customer services again.

"About this restriction of plants being sent to Sweden..." I said.

"Yeah..." said an operative.

"I've rung the Swedish Embassy, I've rung the European Commission offices, I've rung the DTI and I've rung MAFF and they all tell me it doesn't exist."

"It does though, dunnit..." said the operative.

"No," I said, "It does not."

"It's in the book," said the operative.

"Which book?" I said.

"The Customer Services Guide," she said.

"I haven't got a Customer Services Guide," I said.

"No, you wouldn't have," she said, "You're a customer. We don't give the Customer Services Guide to customers."

"What do you give to customers then?" I said.

"We give our Terms and Conditions book to customers," she said.

"I've got that," I said, "And it doesn't mention anything about restrictions on sending plants to Sweden."

"No," she said, "It wouldn't. That's in our Customer Services Guide."

At this point, I felt this discussion was going nowhere. Indeed, a discussion of the finer points of Aristotelian tragic theory with the nearest brick wall might have been a good deal more productive. I rapidly terminated our conversation. I rang again and was put through to a different operative. This time I asked the operative to tell me where Parcelforce had obtained the spurious information about Sweden's unilateral ban on plant imports.

"Sweden told us," I was informed.

"Are you aware that Sweden cannot,



↑ If only I'd logged on to the Parcelforce Web site I would have known that plants (not to mention bees, contraceptives and human remains) are not delivered to Sweden!





according to European law, prevent the importation of plants?"

"Oh yes it can," I was informed, "It says so in the Customer Services Guide."

Reaching for one of the few tufts of hair which were still attached to my scalp, I gently pulled it out by the roots – "But I haven't got a copy of the Customer Services Guide..." I muttered dispiritedly. I already knew what was coming next. And yes, sure enough – "Oh no, you wouldn't have. You're a customer..."

For some reason, I was unaccountably reminded of **The Hitchhiker's Guide to the Galaxy**. The Vogons are just about to destroy earth to make way for a hyperspatial express route. When the people of earth complain about this, the Vogons wave their protests aside. After all (they say), the demolition orders are on public display in the local planning department in Apha Centauri which is only four light years away!

I suspect that Parcellforce's Customer Services Guide may have been written by Vogons.

## Office blocks

When I next phoned, I asked to be put through to the managing director's office. In my innocence I had assumed that the managing director's office might possibly be the office of the managing director. This is not the case. As far as I can work out, the managing director's office is staffed solely by an answering machine containing an endless loop of tape that invites you to hang on or leave a message. After hanging on for an age and a half I left a message. I have no idea if anyone listened to it. If so, they haven't told me.

By now it had slowly dawned on me that the various levels of customer service to which I had been treated were actually no more than blocking mechanisms designed to wear me down and prevent me getting through to anyone who could help me. I was not, however, to be deterred. I rang another operative and told her as politely as I could that I didn't want to speak to her, to any of her colleagues or to the managing director's answering machine. I had a

contract with Parcellforce to deliver plants to Sweden, Parcellforce had failed to honour that contract, they had told me palpable untruths which suggested that the entire Swedish government was in contravention of European law and unless she put me through to someone who could get this sorted out pretty damn' quick, I would... (she at once put me through to someone in Headquarters. This was lucky for me since I was by now blathering inconsequentially and, in truth, I had no idea what on earth I could have threatened to do had I been given time to finish my sentence).

The person at HQ was surprised that I'd been put through to her. She was, it seemed, one of the people whom the elaborate Post Office blocking mechanisms are supposed to protect from mere customers. I silently cheered.

The woman at HQ at least had the decency not to lay the blame for my lost parcel with the Swedish government. The real reason, she said, was that Parcellforce did not consider their delivery agents in Sweden (the Swedish Post Office no

## "I suspect that Parcellforce's Customer Services Guide may have been written by Vogons"

less!) up to the job of delivering items as delicate as plants.

I decided I wanted to speak to the managing director of Parcellforce. I asked for her phone number. I was given a switchboard number but was informed that it would be impossible to contact the managing director herself. I asked for the managing director's name. Vanessa Leeson, I was told. Hmm... now I had already noticed that the e-mail address of Post Office employees end with @postoffice.co.uk and start with a first name, a dot, then a last name. No, surely, that would be too simple. Surely Ms Leeson's e-mail address couldn't be..?

I decided to give it a go anyway. I would complain to Ms Leeson that the 'Terms and Conditions' provided to

↑ **Just £1.49 for a domain name! So where's the catch? Well maybe there is one and maybe there isn't. The only way you'll find out is by reading the small print.**

customers do not give the terms and conditions contained in Parcellforce's own secret book of excuses. I addressed my complaint to [vanessa.leeson@postoffice.co.uk](mailto:vanessa.leeson@postoffice.co.uk)

Would you believe it? The next day I received a reply. From the managing director herself! A couple of days later, she e-mailed me a long and apologetic letter in which she invited me to contact her again on the subject of financial recompense and promised me her personal "sympathetic and prompt consideration." Gosh (I thought). Isn't e-mail wonderful!

## Small print, big money

The Post Office doesn't have a monopoly on small print. I recently chanced upon the domain-registration company, UKReg. "UK Domains £1.49" its Web site [www.ukreg.com](http://www.ukreg.com) trumpets in big, friendly-looking letters. In tiny, less friendly-looking letters, at the bottom of the page it adds: "Prices on this page exclude NIC fees. UK domains are charged at £3.99 per year." So, when comparing the cost with other companies' two-year registration fees, the price is really £9.49.

But that's not the worst. UKReg has a service agreement amounting to more than 3,000 words of tiny text. You would be well advised to read it all. Here's a selected highlight: "You agree that if you contact the UKReg offices or associated companies via telephone, you will be charged an administration fee. Presently this fee is £100." Gulp!

Incidentally, regular readers may be wondering why I have not said anything about Sun's StarWriter word processor. In last month's column I promised to write about StarWriter this month. Well, may I respectfully draw your attention to the text hidden away in teensy little letters in the back pages of **PC Plus** stating "Contents subject to change".

For goodness sake, you people, can't you just READ THE SMALL PRINT?



[huwcol@aol.com](mailto:huwcol@aol.com)  
[www.treetops.u-net.com](http://www.treetops.u-net.com)



## WIRELESS LAN

# 3COM Air Connect Wireless LAN

**PRICE** £1,335 **EX VAT** £1,136 **SUPPLIER** 3Com **PHONE** 01189 278 300  
**ONLINE** [www.3com.com/wireless](http://www.3com.com/wireless)

**3Com's wireless LAN starter kit consists of an access point and three wireless LAN PC cards. Could this be an end to that tangle of cables behind your PC?**

**P**ull out anyone's PC and monitor and the chances are you'll be presented with a Gorgon's head of cables. They may not be snakes, but no matter how hard you try to keep them in place, every time you need to unplug something you'll find its cable intertwined with every other cable coming out of your PC. At the last count, I found about a dozen at the back of mine – and that's not including the power leads for modems and network adaptors. Try to extract one and you almost need to rebuild your PC. Imagine how nice it would be if all your kit was recognised by your PC, and that each bit could talk to each other without a cable.

Infra-red connection was supposed to sort most of this out with keyboard, printers and mice all flashing at each other. This is fine for slow devices in close proximity but it still needs line of sight access between equipment and doesn't work around corners.

Enter wireless connectivity. It doesn't eliminate all the wiring but it can do away with the network cables, printer

.....  
**Tested on**  
 Athlon 600

cables and modem leads. 3Com supplied us with its starter kit. This consists of an access point and three wireless LAN PC cards. The access point acts as a bridge between an existing wired network and up to 63 simultaneous wireless PCs. The access point connects to your existing network hub or switch using a standard category 5 cable (the one that looks like a telephone plug).

### Before you connect

Before connecting the unit to your network, you need to set it up over a serial cable. A null modem cable has to be connected between your installation PC and the back of the access point base unit. It supplies a script on the administration utilities CD. This will start up HyperTerminal on your PC and set it up to talk with the access point. You can use any terminal program to do this, but using the script is much easier because it automatically configures the baud rate, emulation and data bit settings.

Once the devices are talking to each other, press escape a couple of times and the main setup menu should come up.

We chose AP installation and, after entering the default password 'comcomcom', carried on to set up the network addresses. If your system uses DHCP then you won't need to install an IP address. If you're installing this sort of hardware, you should be conversant with your network settings and protocols and you'll need to know the default gateway and subnet mask. The final thing is to assign a unique name to the access point. It's important to take an accurate note of this name because each PC that connects to this point will need this information. Save the information and connect the unit to your network hub.

It's advisable to situate the access point as high as possible to give maximum range. If power is not readily available for the unit's power supply, 3Com provides a PowerBASE-T connection that enables the access point to get power over the network cable. This saves having to trail extra power leads up the wall.

### The next step

Next, install the PC card on your portable computer. We needed both the Windows 98 CD and 3Com utilities disk. Installation is straightforward: You run setup from the CD and select Install AirConnect WLAN Adaptor. This sets up the standard networking protocols and drivers. You'll need the exact name of your wireless service area as set up earlier – it has to be exact and it is case-sensitive.

### Blinking brilliant!

Start your computer and there should be a set of blinking LEDs. When they don't blink, you're out of range of the base network; a slow blink indicates that you're trying to log on; and a faster blink means you're exchanging data. The faster the blink, the higher the data rate. 3Com claims a range of several hundred feet. With our setup, we managed about 150 feet but with a better positioning of the access point, we expect this could be improved.

With multiple access points and planned PCI cards it should be possible to set up a network that enables you to roam wirelessly over a considerable distance – ideal for an educational campus or business spread over a large site.

**Paul Warner**

### PCPlus Verdict

#### 3COM AIR CONNECT WIRELESS LAN

##### ✓ FOR

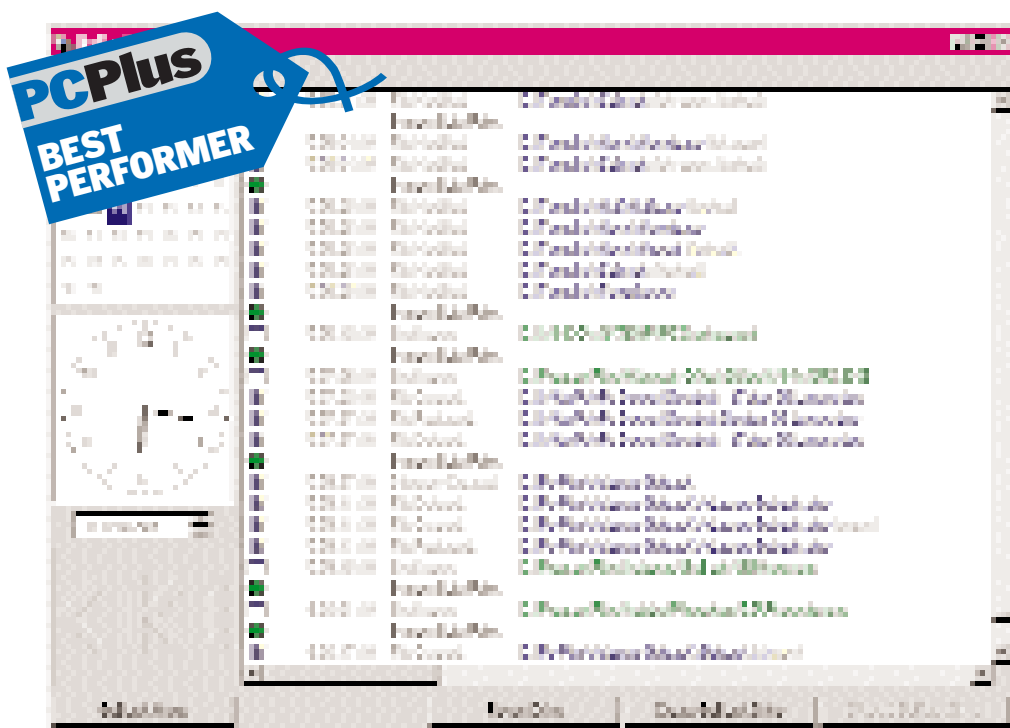
→ Five times faster than previous wireless networking and the start of true PAN

##### ✗ AGAINST

→ As with most new developments, a bit expensive

**Specification** .....8  
**Quality** .....8  
**Performance** .....9  
**Value for money** .....7

**OVERALL** .....8



## FILE RESCUE

# Adaptec GoBack 2.2

**PRICE** £45 **EX VAT** £38 **SUPPLIER** Adaptec **PHONE** 01276 854500  
**ONLINE** www.adaptec-europe.com (you can download a free trial version)

Even written over a vital file or had a software installation go wrong? GoBack can put right these everyday disasters

**G**oBack does just what you would expect. It puts things right when something untoward happens. Suppose you write over an important

file as you use it as a template for a new file, or you install a new piece of software only for it to run havoc with your system files, or, worse, you remove a piece of software and it takes vital DLLs with it. Whatever the cause, GoBack promises to get you out of the mess, even if you cannot get into Windows.

Unlike other similar utilities, such as PowerQuest's SecondChance, GoBack doesn't depend on the user to make intermittent snapshots of their files. Instead it works continuously in the background, noting every change you make, every file you save, rename, delete and every time you open an application. All this information is stored on to an area of your hard disk that can take up to ten per cent of your drive space, although this can be reduced at installation if your drive is full.

In testing the utility, we spent a short



↑ The main GoBack screen from where you can recover files or revert the entire hard disk.

Tested on PIII450 with 128MB

**Requirements** Pentium or K6 PC running Win95/98/Me 3 2MB RAM, 10 per cent of your hard disk space. If you have less than 20 per cent of your hard disk space available, GoBack will only use half of the available space

while deleting unwanted applications, renaming, changing and deleting files and were not entirely unsurprised to note that the hard disk was hammering away as fast as it could. Even so, it was still writing a minute or so after we have finished. This can slow your machine fractionally.

There are three main ways to restore your files should disaster strike: recovering individual files, reverting the entire hard disk to a previous state either within Windows or without Windows starting if your system will not boot, and running the previous version of your hard disk as a virtual drive from within Windows.

You can restore single files or groups of

files from a list offered by GoBack in the main GoBack window, or from Windows Explorer. In Explorer a new menu item is added, so if you select a file and left click you will find an item called Show Revisions. Choosing this throws up a list of revisions for the particular file from which you can save or open the old version.

As GoBack makes a copy of a file every time you save it, you are presented with a large number of options. Files can be opened or saved, so if you do want to look at a file and print it out rather than saving it, you can do so. If you do want to save the old version, you can rename it and relocate it before you save it, so you do not simply overwrite the new version.

As GoBack works continuously this complete recovery can be timed to within a few minutes. So if you install a new piece of software at 9:15am and by 9:25am your machine is in tatters, you can nip back to

← **GoBack notes application activity (in green) and file activity so you can choose the right moment to revert.**

9:15am by launching GoBack. As GoBack is working continuously in the background, it creates a System Safe Point to which you

can revert every time you save a file. So there are System Safe Points created every few minutes in normal use.

Should you not be able to boot into Windows, GoBack can still be run. The utility places an interrupt screen before the Windows loading screen appears. So you can sidestep Windows and recover your hard disk outside Windows if need be.

Finally, you can run an old version of your system as a virtual drive. This virtual drive is assigned a drive letter that appears like any other drive in your system. You can then choose which files to copy over to your current system.

However, this way of doing things is resource hungry and you are recommended to delete virtual drives once you have finished with them.

Overall, GoBack performs extremely well. It makes complicated procedures seem like child's play. Its constant background working makes it easy to recover multiple versions of documents, or to pinpoint the exact moment before something awful happened and to recover your system from that moment. While it should not be used instead of file backups, it certainly makes it much easier to recover from both minor and major disasters.

**Adele Dyer**

## PCPlus Verdict

### ADAPTEC GOBACK 2.2

<b>✓ FOR</b>	<b>✗ AGAINST</b>
→ Provides excellent protection	→ Can slow your machine fractionally
Exceptionally easy-to-use	→ No support as yet for Windows NT or Win2000

<b>Specifications</b>	<b>9</b>
<b>Quality</b>	<b>9</b>
<b>Value for money</b>	<b>9</b>
<b>Performance</b>	<b>10</b>

**OVERALL** ..... **9**



VECTOR GRAPHICS PACKAGE

# Adobe Illustrator 9.0

**PRICE** £316 **EX VAT** £269 **SUPPLIER** Adobe  
**PHONE** 020 8606 4001 **BUY ONLINE** <http://eurostore.adobe.com>

**The Web is changing the rules for traditional graphics production. Does Illustrator keep up?**

**A**dobe Illustrator is the market leader in vector graphics, and has been for a long time. However, the rise of low bandwidth, high quality Internet animations using Flash and other systems presents it with a challenge, and an opportunity. Release 9 sees a more streamlined Illustrator and one which is more focussed towards Web design.

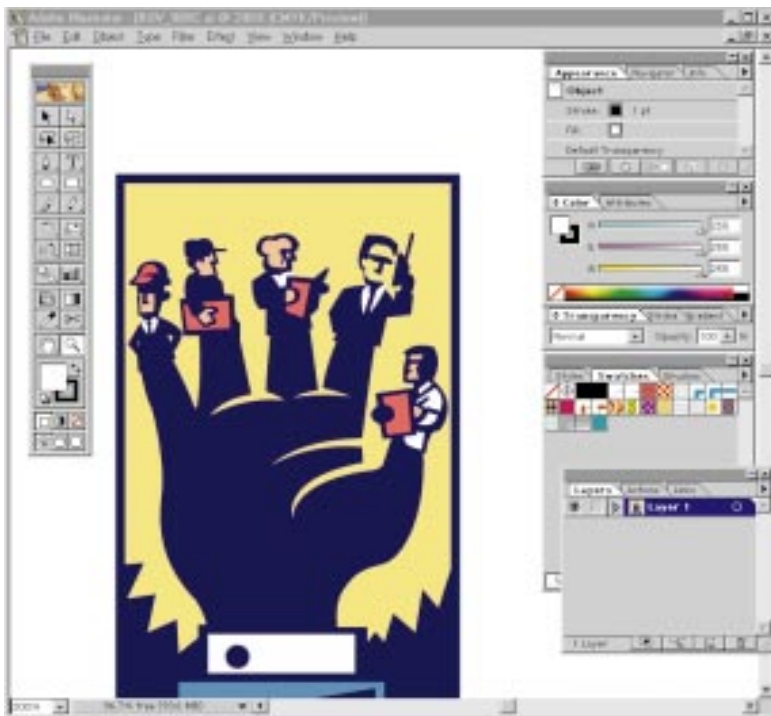
When designing Web graphics, you can now view them as they would appear once exported as bitmaps. In other words, although Illustrator is still working with high quality resolution independent vector graphics, you can see as you are working how your finished image is going to look when it's just a few pixels in size.

Illustrator is still very much focussed on the production of still images, but animation is better catered for in the new release. You can now split all the objects on a layer into several different layers, then export each as an animation frame in a Flash movie. Integration with Photoshop 5.5, with its layer animation features, will help Web animators but Illustrator 9 doesn't remove the need for Macromedia Flash or Director for more sophisticated work.

When it comes to outputting your work, you can do it in a number of ways. You can output Flash format for low bandwidth vector graphics on the Web, or use the new SVG (Scalable Vector Graphics) format. You can also output bitmapped images in a variety of formats, or create PDF files. The export function gives you very specific control over the size and detail of bitmaps enabling you to make the trade-off between file size and quality for your Web images much more easily.

There are customisable keyboard shortcuts and the ability to simplify paths which reduce the number of points on them automatically. Projects are now better organised. Nested Photoshop-style layers group objects and text items enabling you to turn parts of your image on and off, apply effects, and work on parts of your project in isolation. This speeds up the whole design process and makes complex graphics a lot more manageable.

→ Illustrator's main screen retains its familiar layout, but resembles Photoshop even more closely.



↑ You can optimise the output of bitmaps, but the options for Flash export are more limited.

Transparency is heavily featured in version 9. It's now possible to have transparent and semi-transparent shapes, text, and colours which can be combined to produce complex, multi-layered images. You can use feathering to soften the edges of objects, and transparency masks to create very specific transparency effects in your work.

You can now use drop-shadows and glows to instantly add effects to an object without altering your ability to edit the object. It's also possible to make the size of one shape alter relative to another object. Thus, text can be changed even after you've applied shadows, or effects to it. Also, background images, shapes, or buttons can be made to grow or shrink automatically to fit the text, so you can quickly create a number of different graphics using the same styling.

The fact that text now remains editable even after you've applied effects, distortions, and filters to it will be a massive help to hard-pressed designers. Once you establish your 'house style', you can simply alter the text or graphical shapes for each new image you want to produce. You can even save your collection of effects as a

Graphical Style, and it will become available to apply to any text or object with a single click. Powerful stuff.

There's a lot that's new in Illustrator 9 and much of it will be of use to anyone working seriously with the package. The features for optimising bitmaps for the Web are now pretty standard among Adobe software, and compete well with standalone packages like Macromedia Fireworks. Other enhancements like the ability to create graphical styles will help designers to give an overall look to a client's documents or Web site without creating every image from scratch. The new transparency effects will add a new dimension to Illustrator work and, hopefully, a new freedom to designers.

There are problems, though. It's still not obvious when exporting to Flash what will work and what won't, and what effects will add massively to file size. Illustrator could offer warnings and suggestions here, but it doesn't. In addition, the documentation isn't as thorough as we're used to from Adobe. There are none of the usual tutorials and instructional videos. This contributes to giving Illustrator quite a steep learning curve.

**Christian Darkin**

## PCPlus Verdict

### ADOBE ILLUSTRATOR 9.0

✓ FOR	✗ AGAINST
→ Transparency effects	→ Documentation is poor
→ Graphical Styles speed up design	→ Web animation could be more sophisticated
→ Save as optimised bitmaps or Flash files	

Specification .....	8
Quality .....	9
Performance .....	9
Value for money .....	8
<b>OVERALL .....</b>	<b>8</b>



**DURON PC**

# Atlas Meridian A650D

**PRICE** £979 **EX VAT** £833 **SUPPLIER** Atlas  
**PHONE** 0208 532 6515 **ONLINE** www.atlasplc.com

**It's AMD's rival to the Celeron promising power at a low price. And Atlas is one of the first to pop a Duron into a mid-range box – but how effectively?**



**A**tlas has been quick off the mark putting AMD's new Duron processor into a PC. This £979 Meridian A650D system is well equipped in several areas, so should give the new chip a good first outing.

The Duron is based on Athlon technology, but is designed by AMD to be a direct competitor for Intel's Celeron. It comes in the same kind of packaging as the Celeron and Pentium III (though they're not pin-compatible), forgoing Slot A for what AMD refers to as Socket A. The Duron chip only has 64K of level 2 cache, but because this runs at the core frequency of the processor – 600, 650 or 700MHz – it still manages good

## Specifications

**Processor** 650MHz AMD Duron  
**RAM** 128MB (1.5GB max)  
**Drives** 190Gb Fujitsu hard drive, Panasonic 10x DVD, TEAC 8x4 CD-RW, floppy  
**Video** nVidia Riva TNT2, 32MB  
**Display** CTX PR705, 17-inch  
**Expansion** 2 USB, 2 x 9 pin serial, parallel  
**Other hardware** V90 modem, TEAC Powermax 80/2 speakers  
**Operating system** Windows 98 SE, Software SmartSuite Millennium, Nero 5, DVD/modem/sound utils

performance. Original Athlons run with a 512K cache at one half or one third the core frequency, depending on model.

## What you get

Atlas has put its Athlon in a Gigabyte GA-ZM system board which uses a new VIA chipset to support the Duron. There's a generous 128MB of memory in there which is plenty for Win98 or 2000 – Windows 98SE is the operating system here.

Permanent storage is no less well provided for, with a 19GB Fujitsu hard drive inside and twin CD-style drives on the front panel. There's a 10-speed Panasonic DVD and a CD-RW drive from TEAC, which can write CD-Rs at up to eight-speed. This gives great flexibility, enabling you to read all forms of silver disc and to write everything except DVD-RAM, which is still not an accepted standard.

The GA-ZM is a Micro ATX board, which means limited expandability. Here it has just three PCI slots, with one used by a Diamond Supra V90 modem. The other two are available, but upgrade is

going to be limited. Sound is provided by the South Bridge of the VIA chipset and is SoundBlaster compatible. It runs to a pair of Powermax 80/2 speakers from TEAC, which are passable but nothing to get excited about.

Graphics are generated by a 32MB nVidia Riva TNT2 graphics card sitting in an AGP slot and feeding a better than average 17-inch CTX monitor. This has a fully flat tube face and gives a clear and very stable picture with enough detail for high resolutions. The keyboard is one of Atlas' own brands and the mouse is a rebadged Logitech Pilot Plus.

## The Duron in action

So, what's the performance like, compared with a Celeron? It's better, scoring a **PC Plus** Benchmark of 1.33. This compares, for example, with 1.12 for Elonex's 633MHz Celeron-powered Web Rider and 1.23 for Quantex's 666MHz

← **A good, well-balanced system, showing how well AMD's new chip can do.**

Pentium III-based system, both reviewed in last month's group test.

The 3DMark benchmark didn't do as well, recording only a top 1,973 index, but this shows some lack in the nVidia card, rather than the processor itself. Video 2000 produced a fair result, with a score of 2,306.

Atlas includes a copy of SmartSuite Millennium with the Meridian, which provides all the software basics, and a copy of the latest version of Nero is bundled with the CD-RW drive. This is an excellent utility, offering as near trouble-free CD-R and CD-RW writing as you're going to get.

Atlas has done well with the Meridian A650D, combining the new processor with a good memory complement and plenty of permanent storage, too. While it may lack a little in expandability and could do with an improved sound system, for many general-purpose tasks it's an ideal solution.

Atlas offers a simple one-year back-to-base warranty with the machine, pretty much the bare minimum, but the system is still good value at under £1,000 all in. The Duron looks very promising as a new budget processor and we'll be looking at a group of Duron-powered PCs more closely next month.

**Simon Williams**

## PCPlus Verdict

### VERDICT HEAD

#### ✓ FOR

- Faster than equivalent Celerons
- Twin DVD/CD-RW drives
- 128MB memory

#### ✗ AGAINST

- Unexciting sound system
- Limited expansion on system board

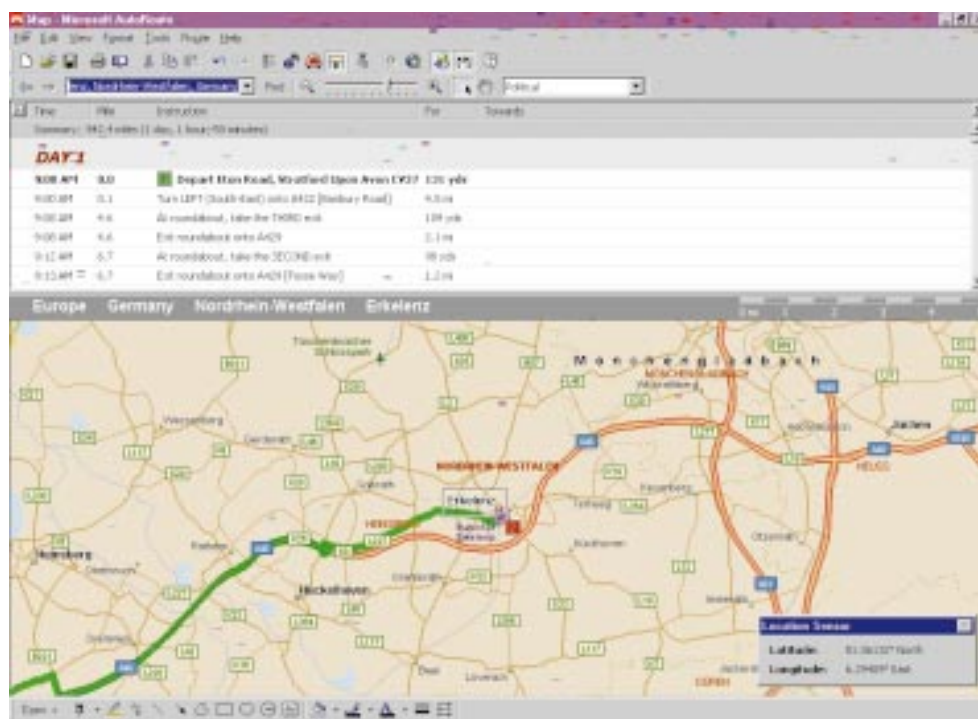
**Specifications** .....8  
**Quality** .....8  
**Value** .....8  
**Performance** .....10

**OVERALL** .....9

## → Performance

BapCo Internet Content	127
BapCo Office Productivity	126
3DMark 800 x 600 x 32-bit	1489
3DMark 1,024 x 768 x 16-bit	1,973
Video 2000	2,306





## ROUTING SOFTWARE

# Microsoft AutoRoute Express 2001

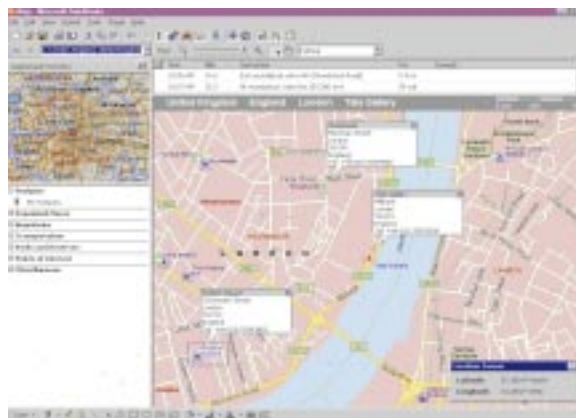
**PRICE** £60 **EX VAT** £51 **SUPPLIER** Microsoft Connection  
**PHONE** 0345 002000 **ONLINE** www.microsoft.com/

**Microsoft's latest version of AutoRoute now encompasses Europe. Well, part of it anyway**

**W**e were expecting great things from AutoRoute Express 2001. 'Now includes Europe' read the splash in the corner. 'Find address-to-address routing in Great Britain, France and Germany' read another box, along with one saying 'Reviews from the Good Pub Guide'. A few of these statements turned out to have a few ifs and buts when you read the fine print.

AutoRoute does cover much of France, Germany, Belgium, the Netherlands, Luxembourg, Switzerland, Austria and Italy. However, the keen eyed among you will have spotted a few notable exceptions in this list of Europe's countries. We were also hoping for a little more coverage than just main roads and street maps of major cities.

If you look on the maps you'll find that there is not as much detail as you might expect. We looked up Erkelenz, a small town in Nordrhein Westfalen between Dusseldorf and Cologne. Although the town is small we thought its location in the middle of an industrial conglomeration would mean it would be mapped. We were disappointed to see that it was not. Our attempts to enter a specific address



↑ The Tate Gallery is clearly shown, together with its address and telephone number, but sadly not the Tate Modern.

**Minimum requirements**  
P90, Win95 or NT 4.0 or later, 20MB RAM for 95, 36MB for NT, 95-145MB hard disk space, quad-speed CD, SuperVGA monitor  
**Tested on**  
PIII 450 with 128MB RAM

showed us where the town was. However, another location search did turn up Erkelenz railway station and choosing this option showed us some of the main roads around the town. We went to Help to see if we could get any more detail, but found that only small parts of France and Germany are covered in street by street detail, while most areas are only shown with main roads.

We started to map out a few routes, one from London to Erkelenz and the other to Stratford-upon-Avon. The first shock was the realisation that none of the blocks in the Barbican, our starting point, were on the map. However in both cases a predictable route to our destination was found.

Although you can customise the search to avoid certain types of road or to take either the quickest or shortest route, we were disappointed there was no other quick way of finding an alternative route. We were also surprised to see some confusing directions given in and out of Stratford-on-Avon.

While looking at the Stratford map we were again surprised by a few omissions from the main town map, such as the theatre and Shakespear's birthplace, surely the two most visited attractions in the town. Both of these could be found by searching for them, but they should have been on the main map. Looking more closely at London's sites we were amazed to see that there were no churches on the map, just 'Attractions and Tourist Facility' marked such buildings as St Paul's and every other church on the maps. And there were a few notable exceptions from the

← The route to Germany only got us to the town we wished to visit, not the street.

sites you might want to find, such as Tate Modern and its ill-fated footbridge. Add to this some less than obvious controls

and you have a package that less than impressed this reviewer.

On the plus side the maps are clear and well drawn, you can put in map-pins to mark specific places, pin-point a specific house number on a map, and the address and telephone details attached to every attraction on the map. And on our test machine it was reasonably fast.

However, much of AutoRoute's information is available for free on the Internet. There are no end of sites giving detailed town maps and there are some good route finders. Since you have to go online anyway to access the additional information, such as the Good Pub Guide, you do have to wonder whether you actually need AutoRoute on CD.

There are GPS facilities and Windows CE versions of the software included for free and these must be very useful if you have either of these gadgets. However if you have neither and are simply going to print out the maps and take them with you, then we would advice you have a good look at the services available on the net before forking out £60.

**Adele Dyer**

## PCPlus Verdict

### MICROSOFT AUTOROUTE EXPRESS 2001

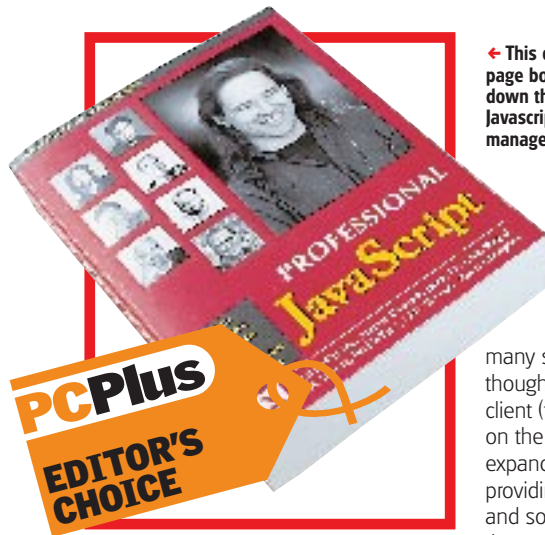
✓ FOR	✗ AGAINST
→ Clear maps	→ Lacking detail
→ House numbers on roads	→ Surprising directions and omissions
→ Good amount of detail given with routes	→ Expensive compared to free online services

Specification .....	6
Quality .....	5
Performance .....	5
Value for money .....	5
<b>OVERALL .....</b>	<b>5</b>



# Essential reading

Wilf Hey looks at an analysis of Javascript's applications, a beginner's guide to C++ and a TCP/IP workbook



← This one thousand page book breaks down the features of Javascript into manageable chapters.

[www.wrox.com](http://www.wrox.com)

## Professional JavaScript

A must for all software development professionals

**PRICE** £49.99  
**FORMAT** Book  
**AUTHOR** Nigel McFarlane et al  
**PUBLISHER** WROX  
**ISBN** ISBN 1-861002-70-X

JavaScript is a scripting language that has become extremely popular on the Web in an amazingly short time: it saw the light of day less than five years ago, yet has matured so that it deserves this wonderful, comprehensive book. Unlike

many scripting languages, JavaScript, though originally developed to run on a client (that is, at a workstation, specifically on the Internet browser), has been expanded so that it can run on a server, providing access to servers, databases and so on). This book takes you down the route to seeing JavaScript as a wider application language – not just making Web site browsing more interesting, but more useful generally. Though the book could do with more diagrams (for visual relief if nothing else), there can be no criticism of its content, which is thorough, crystal clear and practical.

The thick book (over a thousand pages) is arranged primarily as a chapter-by-chapter analysis of the features of JavaScript and how they can best be deployed by a professional developer. It will also prove to be good as a reference for the immediate future – at least until Netscape and Microsoft match up the object models in their differing implementations of this excellent, flexible network-based language.

**PCPlus Verdict 10/10**


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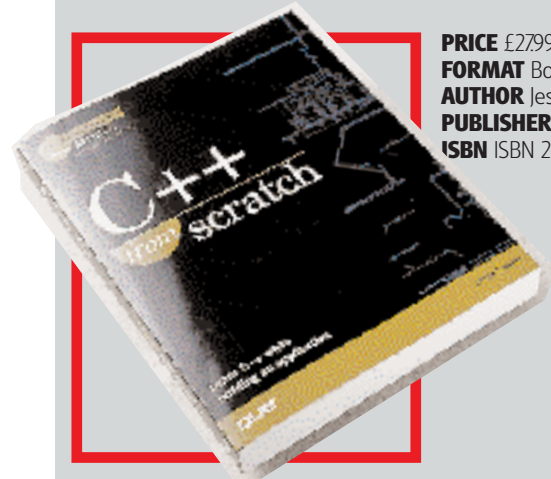
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**PRICE** £27.99  
**FORMAT** Book/CD  
**AUTHOR** Jesse Liberty  
**PUBLISHER** Que  
**ISBN** ISBN 2-7897-2079-5

[www.quecorp.com](http://www.quecorp.com)

## C++ From Scratch

This book provides a good place to begin learning C++, one of the most popular modern computer languages. It assumes almost no background exposure to programming, and conveys lucidly the basic principles of object oriented programming (OOP), including the often neglected subject of how to approach a problem with a view to object oriented analysis. The book takes on a project that lends itself well to OOP – the building of a game that resembles the old Mastermind craze of some years ago.

The author is popular, and one highly regarded for his eloquent and understandable language. His deep knowledge ties in with his easygoing language to provide a

feeling of confidence to the reader. Working on a simple program, you will quickly realise that you are being guided by an expert, to think as an expert.

There are other pleasant things about this book: the text is particularly easy on the eyes, and chapters are marked by a thumb index for instant access.

The accompanying CD contains several products and links to interesting pages on the Web; but primarily it supplies DEV-C++, a full compiling environment with which you can actually get to work composing your own programming masterpiece.

**PCPlus Verdict 9/10**



**PRICE** £14.99  
**FORMAT** Book  
**AUTHOR** Andrew G Blank  
**PUBLISHER** SYBEX  
**ISBN** ISBN 9-7821-2644-8

[www.sybex.com](http://www.sybex.com)

## TCP/IP JumpStart

For clarification, TCP/IP stands for 'Transmission Control Protocol / Internet Protocol', and refers to the suite of protocols which, in combination, deliver the Internet to computers and is often, confusingly, called 'the language of the Internet'.

This friendly book features a lot of helpful diagrams and examples that take you from the very beginnings through to a good basic understanding of networking, especially from the technical viewpoint. Its goal is to lead you to a firm fundamental knowledge of the whys and wherefores of the several layers of responsibility of the Open Standards Interconnection (OSI) model of communication,

and the various protocols used at these layers.

Ideal as a workbook, it is designed with margins for notes, and features large print and clear headings. It provides basic exercises amongst its examples and, at the end of each chapter, supplies review questions (with answers in an appendix) to test your assimilation of the material presented.

The course is easy going, but the material will be new to many – even to proficient Web users. It provides a simple, broad-based yet surprisingly sophisticated panorama of its subject, and is a delight to read.

**PCPlus Verdict 8/10**

# BRIEF ENCOUNTERS

→ The bit of the mag where we get short and to the point...



## Belkin USB Busport Mobile

**PRICE** £70 **EX VAT** £60

**SUPPLIER** Belkin UK

**PHONE** 01604 678 300

**ONLINE** www.belkin.co.uk

USB has finally taken off and, if you're a laptop user, you should think about getting USB support for your PC. Unfortunately, it's not usually a case of cracking open the case and throwing a USB port on to the motherboard. The vast majority of laptops are still USB unaware.

The USB Busport Mobile is a PC card which strings two USB ports at the end of a short cable. The card itself performed well, didn't throw up a single glitch and basically did exactly what it says. It would have been better to do away with the ports being on a wire, and integrate them into the card itself, though.

**PCPlus Verdict 8/10**

## Logitech Mini Wheel Mouse

**PRICE** £20 **EX VAT** £17

**SUPPLIER** Logitech

**PHONE** 01753 870 900

**ONLINE** www.logitech.com

This funky-looking mouse is Logitech's Mini Wheel Mouse and, as you might have guessed from the name, it's slightly smaller than your average mouse. The Mini Wheel doesn't have a curvy profile so it's suitable for both left-handed and right-handed use.

The thumbwheel is great for scrolling in productivity and browser type programs. Although there is a lack of optical technology and the shiny silver surface is easy to scratch, it's great value.

**PCPlus Verdict 8/10**



## LaCie PocketDrive

**PRICE** £351 **EX VAT** £299

**SUPPLIER** LaCie PocketDrive

**PHONE** 020 7872 8000

**ONLINE** www.lacie.com

**How** does a 6GB portable hard drive that takes just seconds to connect to your PC sound? Not bad if you ask us.

There's no software to speak of except for Silverlining, which performs low-level formatting and partitioning of the drive. The only other feature is Firewire functionality. Using the USB interface we measured data transfer at around a slow 0.5MB/s, while using the Firewire interface can take that up to a staggering 12MB/s.

Overall it's a well made future-proof drive that you can depend on to look after your data.

**PCPlus Verdict 9/10**



## USB MobileRack

**PRICE** £175 **EX VAT** £149

**SUPPLIER** DS Computers

**PHONE** 020 8447 0123

**ONLINE** www.vipower.com

The idea behind this ingenious kit is that you use it to mount an IDE drive into a cradle and then pop the cradle into a docking bay mounted in a 5.25-inch bay on your PC where it acts as any other IDE drive. When you want to use it externally on another system you pull it out, push the USB interface on the back and you have an external USB drive.

Performance suffers considerably over USB – we got a little over 800KB out of a drive capable of over ten times that and the kit is a little fragile. If your requirements are more modest, then perhaps a straightforward USB Zip drive using CD-RW is a better bet.

**PCPlus Verdict 7/10**



## → BogoCop Optic mouse

**PRICE** £106 **EX VAT** £90 **SUPPLIER** Global Domination

**PHONE** 01304 225570 **ONLINE** www.bogomouse.co.uk

Fingerprint recognition might sound like some sort of futuristic technology but it's right here, thanks to rather curiously-named BogoCop and its hi-tech optical mouse.

Like the IntelliMouse Explorer from Microsoft, it uses an optical lens instead of a track ball to compute the cursor position on screen. This results in super-smooth cursor control with no moving parts on the mouse to clean.

The BogoCop goes one stage further in optical technology, however, by including fingerprint recognition technology. The BogoCop comes with security software that uses your fingerprint ID to log into Windows, lock your screensaver and encrypt/decrypt individual files instead of the normal passwords.

Unfortunately, the instruction booklet in the box is written entirely in Japanese so a lot of guesswork is required in working out how to use the package. Luckily it's as easy-as-pie to operate.

The other downside is that the security is not too hard to defeat if you know what you're doing, but this is as much to do with Windows as anything else.

The news that Microsoft is to implement biometric technology (that's fingerprint recognition to the layman) into Windows in the next two years makes us think it won't be long before it brings out its own fingerprint mouse. Right now, this is a contender.

**PCPlus Verdict 7/10**





## → Amstrad E-m@iler

**PRICE** £80 **EX VAT** £68 **SUPPLIER** Amstrad **PHONE** 01277 228 888  
**ONLINE** [www.amstrad.com](http://www.amstrad.com)

The Amstrad E-m@iler is a phone with built-in e-mail capabilities. Compared with the price of a normal phone with an answer machine it's not that expensive. However, there is a sting in the tail: each e-mail costs 12p to send, which soon adds up with heavy use.

It's not without its faults either – there's no outbox, so you can't write all your e-mails and send them as a batch job and, during periods of inactivity, adverts

are displayed on the E-m@iler, which is a little tacky.

The screen is quite readable with a 480 x 320 resolution while the pull-out keyboard is a little harder to use because of its small size.

A nice feature is the detachable pocket-docket which enables you to take all your contacts information with you wherever you go. The E-m@iler is ideal for people who haven't got or don't want a PC at home, but still want to send and receive e-mail. For the rest of us, it's a bit of an extravagance we could easily live without.

**PCPlus Verdict 6/10**

## → Elsa MicroLink 56K Fun

**PRICE** £40 **EX VAT** £34 **SUPPLIER** Elsa UK  
**WWW** [www.elsa.com](http://www.elsa.com) **PHONE** 08000 563 445/0118 965 7755

External modems have a few advantages over internal ones. They don't take up any valuable PCI slots and you can tell what the modem is doing at that particular time thanks to the status LEDs at the front of the device.

Elsa has followed the crowd by producing the 56K Fun in iMac blue – the company has gone for bright green. This will match iMac green cases but it might look a bit strange sitting next to your beige box.

The Elsa MicroLink 56K Fun doesn't glow when you're online which is a shame but there is a power switch and LED which are neat touches. Getting online is simple: you get a reasonable manual and an AOL 100 hours free Internet trial. If you want a replacement for your old modem this one could well be worth a look.

**PCPlus Verdict 8/10**





DELPHI CONTROLS

# Classic Software Classic Component Set 2.21

**PRICE** \$69 includes source code **SUPPLIER** Classic Software  
**PHONE** +61 8 9271 5407 **BUY ONLINE** [www.classicsoft.com](http://www.classicsoft.com)

**A powerful suite of Delphi user-interface components which includes the Chameleon Tab Controls**

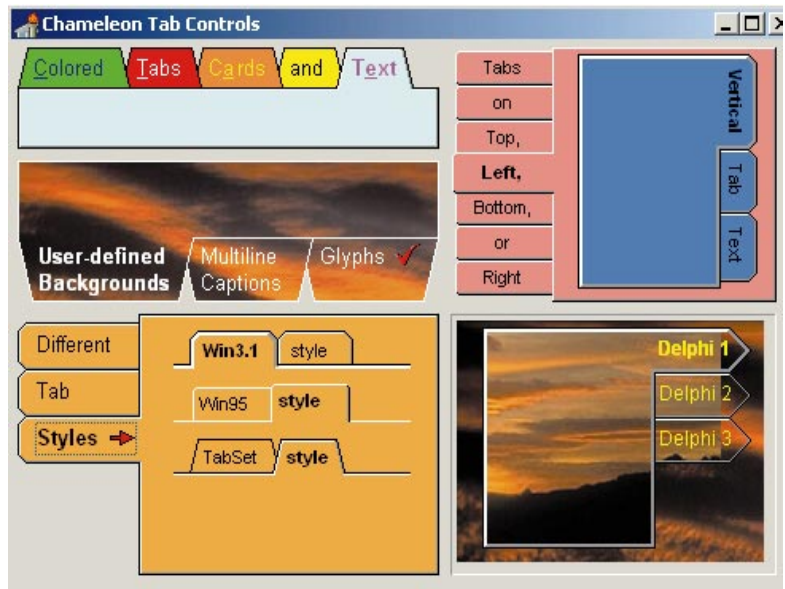
**T**he Classic Component Set (let's call it CCS for short) is a collection of various Delphi controls with a particular emphasis on tab and page components that replace the standard TTabControl and TPageControl objects. Most versions of Delphi are supported, including the venerable 16-bit Delphi 1 compiler, but not the Delphi 2 development system. There is no support for C++Builder developers, either. Having said that, once you've bought the source code, it's a relatively simple matter to recompile the various controls to work with the C++ system.

## Why chameleon?

Many of the components are based on what Classic Software refers to as its Chameleon Tab Control. Why chameleon? The answer to that question becomes all too obvious when you cast your eyes over the accompanying screenshot of a demo program. This demonstrates a certain lack of taste on the part of CCS's antipodean creators, but it does get across the fact that you can have different colours for each tab and assign custom bitmap backgrounds. Obviously, you can also define a somewhat more restrained colour scheme such as, for example, only colouring the active tab or using subtle pastel shades. At first sight, the Classic controls seem rather... uh... classic (that is, retro!) but when you realise that they merely default to a Windows 3.1 'look', and that other tab styles are possible, you'll begin to appreciate them more.

Hot tracking is supported and the page control has a nice feature which enables automatic release of windowed controls on non-active pages, thus conserving system resources. This is especially important when running under Windows 95. In order to support this SaveResources property, there are a number of 'slightly enhanced' components such as the TcsComboBox which automatically remembers which item number is selected, even when the underlying control's window handle has been destroyed. Other tab/page-control related goodies include the ability to place the tabs on each of the four sides of the

→ Although you can create applications that look like an explosion in a paint factory, CCS is capable of creating subtle and sophisticated effects.



control, multi-line captions, disabled and/or hidden tabs and bitmaps on each tab.

The CCS also includes a high-resolution timer which is capable of firing timer events as rapidly as once per millisecond. (Theoretically, the standard TTimer component can do this but, in practice, its reliance on the Windows messaging system makes this impossible). There are a couple of TEdit derivatives which perform automatic capitalisation so that, for example, 'hello mum' gets automatically changed into 'Hello Mum' as you type it. There's a TcsRankListBox item which provides enhanced list-box capabilities such as being able to reorder items by simply dragging them around within the component.

## Feeling fearful?

Those who fear that the dreaded Y2K bug may yet mean the extinction of humanity (yeah, right...) can at least make their own software a little less apocalyptic thanks to an enhanced date entry control. This automatically figures out the intended century (if none was explicitly entered) using a global variable, Epoch, to determine the actual starting date of the century. Thus, setting Epoch to 2000 means that 14/04/00 will be interpreted as being April 14th 2000 and so on.

To an extent, some of the features offered by CCS have been obviated by later versions of Delphi and C++Builder. For example, recent implementations of Delphi contain a built-in mechanism for disambiguating partially specified dates, thus making the aforementioned date

entry control somewhat less useful than it would otherwise be. Nevertheless, the tab control and page control items represent the real crown jewels in this collection and if you need enhanced versions of these components, then CCS is worth the \$69 for these items alone. On the negative side, it would be nice if Classic Software offered ready to go support for C++Builder developers.

Trial versions of the software can be downloaded from the Classic Web site and, in time-honoured fashion, these controls will only work while Delphi itself is running. No fancy installer is used, but full instructions are provided on how to install CCS into the Delphi IDE of your choice, and there's also a CCS-specific help file which can be integrated into the IDE help.

**Dave Jewell**

## PCPlus Verdict

### CLASSIC SOFTWARE CLASSIC COMPONENT SET 2.21

#### ✓ FOR

→ A powerful set of replacements for Delphi and C++Builder's tab and page control

#### ✗ AGAINST

→ C++Builder developers can't evaluate the components before buying the source code

**Specification** .....7  
**Quality** .....8  
**Performance** .....8  
**Value for money** .....7

**OVERALL** .....7

**Requirements**  
Win95/98/NT 3.51,  
Pentium, 16MB RAM,  
2MB disk space  
**Tested on**  
Win2000, 500MHz Intel,  
256MB RAM  
**Extra information**  
A trial version of the  
software can be  
downloaded from the  
Classic Software  
Web site



## COMMUNICATIONS SOFTWARE

# Communicate i2000

**PRICE** £140 **EX VAT** £119 **SUPPLIER** Koch Distribution  
**PHONE** 01256 707767 **PUBLISHER** 01 Communique

↑ Although i2000 is a great all-rounder, it really shows its class when it comes to handling video communications.

**Face-to-face communication, phone calls, faxing – can this new product integrate all these functions into one easy-to-use application?**

One of the main problems with technologies such as Internet Phone, WebCam and even fax by modem, is the general perception that they're too complicated to use. As a result, many people who could benefit from face to face communications, cheap global phone calls, or the ability to send and receive faxes, never take that first step. 01 Communique aims to integrate all of those functions and far more into a single, straightforward program, that has an interface as friendly and familiar as your home answering machine.

Communicate i2000's list of specifications makes for impressive reading, and despite communication software's natural 'ho-hum' factor, we were sufficiently motivated to load up the software with something akin to real enthusiasm. Unfortunately, our eagerness was rapidly dampened by a frustrating series of crashes and difficulties during installation.

However, once the program was finally configured, it was generally pleasantly uncomplicated to use, while its clean design masked a wealth of features that we have yet to see in a rival program.

It has full support for video communication (provided you have a suitable capture card or WebCam). You can use it to speak to other WebCam owners across the Internet, or you can connect to other offices around the world. Unlike many other video phone programs, you can also use i2000 to record the live incoming feed, so it's ideal



↑ Of course, the program can handle the basics, such as faxing, with perfect aplomb.

**Minimum requirements**  
Win95 or higher, Pentium 100, 32MB RAM, 2xCD-ROM, sound card, 45MB hard drive space, voice modem, Internet connection, video capture card or WebCam, WebDam or video camera, SMTP/POP3 Mail server  
**Tested on**  
Win98, P3 800, 256MB RAM, 54GB hard disk space, Sportster Voice modem, SB Live Platinum, Creative WebCam

if you want to replay a conference, or a technical call to other users, or use the recording for training or security purposes – it even has motion activated recording.

You can also capture stills of the incoming video at any stage. If that wasn't enough, you can also send and receive video mail, which is an ideal way to send a personal message without getting roped into a lengthy conversation.

The software incorporates a comprehensive set of messaging functions. At the heart of the system lies its integration with your voice modem. Provided you have a compatible modem, the system acts as an answering machine, with limitless code-protected voice mailboxes, so everyone in the office can have their own, each of which may be accessed remotely.

One really neat feature that caught our eyes was the ability to automatically send

a single voice message to multiple phone numbers, one after the other. This is ideal if you've organised a social event or a team activity, and you need to inform everyone involved of updates in your plans. Again, it's about not getting involved in conversations with every single person that you need to pass information to. However, although this may be a great labour saver, we really have to question features that contribute to the increasing depersonalisation of our interactions with people. It started with automated operators and voice mailboxes, now its auto-messagers. Before you know it, no one will speak to anyone in person any more...

## Net phone support

If you do prefer to speak to people in person, but you're mindful of the phone bills, you're sure to appreciate Communicate i2000's Internet Phone support. While the majority of users don't own the hardware required for videophone communication, most certainly have a sound card, microphone and an Internet connection. These are all you need to take advantage of phone calls to any other Internet user. The great thing about both Internet phone and Videophone, is that calls take place at the cost of your standard Internet connection, which is usually a local-rate number. At weekends, that means that you can talk to people anywhere in the world for as little as half a penny per minute.

Talking of places distant, i2000 incorporates advanced support for remote access. Most answering machines enable you to listen to your messages from another phone, but how many systems also enable you listen to your e-mail, or instruct your computer to redirect your e-mail to another address? You can even have your computer convert your e-mail into a fax, then send that to you, wherever you are in the world.

A comprehensive program such as this one inevitably involves some effort to install properly. It crashed on us on several occasions, particularly when querying the modem. However, when it was working, we were impressed with its sheer scope. It's too expensive for the home user, but it's a nice accessory for your office.

**Matt Broomfield**

## PCPlus Verdict

### COMMUNICATE i2000

✓ FOR	✗ AGAINST
→ A fully integrated	→ Kept crashing
→ Remote access and control features	→ Quite expensive
→ Supports video messaging	

Specification .....	9
Quality .....	7
Performance .....	6
Value for money .....	5

**OVERALL** .....7





# Scene stealers →

Digital is slowly replacing analog as the most sensible choice for home movies, for a number of good reasons. **Adele Dyer** looks at five of the hottest new contenders

**G**eorge Lucas is so impressed with digital video that he intends to shoot the next **Star Wars** film entirely in digital. Many TV programmes now never see a single frame of film. And now you can leap on the digital bandwagon with a digital camcorder. But what's in it for you?

Just a few years ago digital camcorders were rare and exotic creatures with ridiculously high price tags. Now, however, they are dropping in price and in some instances are not a great deal more expensive than the better Hi8 analog camcorders.





Many thanks to Sony for the loan of a Vaio notebook, complete with a built-in DV port, which we used to download all our footage.

Digital has one huge advantage of analog: quality of the images. A digital camcorder has a resolution of around 500 lines, compared to just 200 lines for a VHS camcorder and 330 for an S-VHS camcorder. Nor does that digital quality degrade as you copy it. So you can edit images knowing that the quality of the original will be kept intact.

### Get connected

Obviously editing is made easier on a PC and digital camcorders are ideal for connecting to your PC. All the cameras in this test have DV-out sockets and so are able to be connected directly to a PC, provided you have the right cables and an appropriate piece of software. However, be aware that not all digital camcorders will come with these as standard, so make sure you have everything you need when you buy the camera.

In this test we look at five digital camcorders, one each from the main players: Canon, JVC, Panasonic, Sharp and Sony. They range in price from £850 for an entry-level camera to a massive £1,500 for a real enthusiast's camera. All have different features so you might well find something to tempt you into becoming the next George Lucas.

## → Can your PC handle it?

**So you've shot your footage. Now to edit the whole lot down into a home movie. But is your PC up to the task?**

There are now no end of video editing packages for your PC, covering every user from the complete novice to the Coppolas of this world. However all have some basic requirements which you have to consider before you start editing your movies on your PC, and it is more than just a fast processor.

Most important of all is the amount of hard disk space you will need. 10GB of disk space will only hold 45 minutes of video, and this is before you add in the space occupied by your applications. Neither will this 10GB allow you room to edit that 45 minutes of footage. You will have to allow as much again to work on the footage and store the editing results. In other words, think about having at least a

25GB hard disk, if not larger, to edit any sizable amount of film you might generate, such as your holiday movies.

If you need to invest in a new hard disk, make sure you get an Ultra DMA/66 disk, and if your motherboard does not support this standard, consider upgrading that as well. You may also want to add in a bit more memory to handle the editing process.

Finally you will, of course, need a video capture card. This should be a Firewire card (aka IEEE 1394, DV and iLink). Although these are expensive, it is worth the investment just to keep the footage digital, rather than converting it to analog and then back to digital again when downloading it to your PC.

## Canon XM-1

**PRICE** £1,499 **EX VAT** £1,276

**SUPPLIER** Canon

**PHONE** 0800 616417

**ONLINE** www.canon.co.uk

**It's Canon's top of the range model but money might not be everything when it comes to making movies...**

**C**anon sent us its highest end consumer digital camcorder for this test, the XM1. With a price tag near to £1,500 it might not suit everyone's budget, but it's aimed at those users who have been shooting video for some time and want the best quality optics and some of the features that you would associate with professional higher-end cameras.

So this is the only camera we reviewed with three CCDs, a fluorite lens and optical image stabilisation. The other cameras do have stabilisers but these are digital and so not of the same quality as optical stabilisation.

The three CCD arrangement allows each CCD to capture one of the three main primary colours (red, green or blue). This is a little like asking three specialists to carry out a job instead of three jacks of all trades. Each CCD captures more light and yet generates less colour noise, so the overall image quality is improved.

### Getting in focus

Fluorite is an ore and is able to focus light to a single point more effectively than glass so, according to Canon, surpassing the quality of glass optics. The lens itself has a 20X optical zoom, far stronger than any other camera in the test, although focusing on objects with the full power of the zoom was not desperately easy. For those of you who like to focus manually there is a focus ring on the lens casing.

One neat feature is a nifty overexposure warning sign. You will get zebra stripes over the screen to show you when you are heading for trouble.

There are three shooting modes, including one for taking still shots. The other two are either a normal video mode, while the third enables you to take just 25 frames per second which will give you better freeze framing.

Otherwise the design of the camera is simple. It is not covered



in buttons in the way that the Sony is, but still manages to include a good range of features, mostly controlled from a menu displayed on the camera's screen. The telephoto rocker is under your index finger and the standby button under your thumb as you hold the camera. Playback buttons are under a flap on the carry handle that goes over the top of the camera.

There is both DV-in and DV-out, so you can record your edited film back to the DV tape.

### Not for beginners

This is not a camera for the beginner, no matter how deep their pockets. The camera handling needs someone who has had a fair amount of experience. It is a large camera and is much heavier than the others in this test and this can both cause and accentuate any wobble in inexperienced hands.

In use we found it too heavy and had to use both hands to steady the camera. A tripod would help enormously, of course.

However, for those that are

expert filmers the XM1 does have certain advantages. The microphone is more sensitive than any of the others we tested and did pick up a great deal. It had no problems recording our spoken commentary as well as the ambient noise and produced a crisper sound than any of the other cameras. The DV-in is extremely useful, as is the manual focus ring. The optical stabiliser also seemed to work well in our tests, although the weight of the camera can make inexperienced hands shake.

In terms of performance, we would have expected the higher specification of this camera to have had a greater effect. In fact the end results were not noticeably better than some of the mid-range cameras, notably the Sony and the Sharp. The colours were not sharper and brighter and neither was the focus. We found when we zoomed in that the focus suffered somewhat, being a little soft. It could, of course, zoom in much closer to objects than any of the other cameras, using the digital zoom, although as with all digital

**↑ Lots of features you'd find on a Professional's camera, but with a price tag to match, although the overall image quality wasn't what we'd have expected.**

magnification, quality suffers again and unless you are using a tripod, camera shake is a real problem at this point. It dealt reasonably well with shooting into the sun, although it did create streaks on the picture. Overall the quality of the film was good, but not good enough to warrant the additional price tag.

### PCPlus Verdict

#### CANON XM-1

**✓ FOR**  
→ 3 CCDs  
→ Good lens  
→ Optical stabilisation

**✗ AGAINST**  
→ Heavy  
→ Expensive

<b>Specifications</b>	<b>9</b>
<b>Quality</b>	<b>7</b>
<b>Performance</b>	<b>6</b>
<b>Value for money</b>	<b>4</b>
<b>OVERALL</b>	<b>7</b>



## JVC GR-DVL300

**PRICE** £850 **EX VAT** £723

**SUPPLIER** JVC

**PHONE** 020 8208 7654

**ONLINE** [www.jvc-europe.com](http://www.jvc-europe.com)

**Are you new to digicamcorders? JVC hopes to tempt you into the digital video waters with this...**

**T**his little offering from JVC is an entry level digital camcorder aimed at those who are new to the sport. Features are kept to a minimum, and you cannot expect to find any of the fancy extras that are on the other cameras in this test. Instead you get a camera stripped down to its bare essentials, but one which is easy to use.

The first thing that strikes you is the size of the LCD screen. At 3.5 inches it is far larger than any of the others, which all have 2.5-inch screens. This makes it easier not only to see your film played back, but also makes it easier to see what you are shooting in the first place. The screen itself is a little grainy, but for lining up your shots it is perfectly adequate.

The camera boasts a 100X zoom but this is entirely digital, with no optical zoom at all. This is a rather unsatisfactory arrangement as the more you zoom in, the more you lower the quality of the shot. When you have zoomed in as far as you can, the image becomes so pixellated and broken up that it can require a little imagination to see what is actually in the picture.

### Loss of flexibility

As this camera is aimed at the budget market, there is no DV-in. This is an expensive feature to add, as it incurs an additional tax, but it is very useful if you want to record your movies back to DV tape for longer-term storage.

The usual s-video and composite video connections are on the camera, but there are no sockets for either an external microphone or headphones. There is, of course, a microphone on the camera, but if you want to avoid engine noise, or simply pick up someone's voice from a distance, an external microphone lead is something of a necessity.

The telephoto rocker and the standby button are where you



would expect to find them under the index finger and thumb respectively. Buttons for playback are found on the top of the camera and apart from a dial to operate the menu functions.

While some may like the point-and-shoot approach of this camera, some may find the lack of other features annoying over time. Compare this camera to the Sony and the Sharp and it looks decidedly lacking. This impression only get worse as you consider the added extras.

There is software in the box, but there is no DV cable, only a serial lead. If you are going to be downloading an entire miniDV tape's worth of video, you might as well set it to download overnight because it's going to take that long.

### Pointing-and-shooting

In use the point-and-shoot functionality comes into its own. If you leave the lens cap on, it will tell you this on the LCD screen, and like the other cameras it will also warn you if you have no tape in the camera, or if the battery is

running low. The quality of the film was not as good as the others in the test.

The lack of an optical zoom made a real difference to the quality of the film and if you used the full range of the zoom, the picture became badly pixellated.

It dealt better with shooting into bright sun than we would have expected, but otherwise its white balance needed adjustment – something the novice user it is aimed at would not necessarily know how to correct.

### Sludgy sound

We also found that the sound was not as sharp as it could have been, being a little too high on the treble. We also found we had to press very hard on the record button to start filming, and often had to press the button more than once to have any effect.

In the end, the GR-DVL300's paucity of features does not do it any favours. It is only around £250 cheaper than the mid-range cameras and if you are going to be spending this much on a digital

↑ **Entry-level models usually come a little bit crippled in the features department and this unit is no different. But it is slightly cheaper than its rivals.**

camcorder, you would be advised to go for a camera that will provide features that will suit not just the complete novice, but also a user that has been filming for a couple of years.

Otherwise you may find yourself needing to upgrade your camera after a very short period of time.

### PCPlus Verdict

#### JVC GR-DVL300

✓ <b>FOR</b>	✗ <b>AGAINST</b>
→ Easy to use	→ Too few features to keep more experienced users happy
→ Relatively low price	

<b>Specifications</b>	<b>4</b>
<b>Quality</b>	<b>6</b>
<b>Performance</b>	<b>7</b>
<b>Value for money</b>	<b>8</b>
<b>OVERALL</b>	<b>6</b>



## Panasonic NV-DS55B

**PRICE** £1,000 **EX VAT** £851

**SUPPLIER** Panasonic

**PHONE** 08705 357357

**ONLINE** [www.panasonic.co.uk](http://www.panasonic.co.uk)

**Looking for the dinkiest model on the block? Panasonic claims this is the world's smallest but what are the trade-offs?**

**P**anasonic's NV-DS55B does not exactly have a catchy name, but it has one very notable feature: its size.

Panasonic claims it is the world's smallest and slimmest digital camcorder and that this makes it easy to handle. It is certainly very small and slim and it does fit into the palm of your hand well, but there is more to handling than simply size.

The camera uses a 'shoot' format meaning that the viewfinder can be pulled back and pushed up from its position when the camera is switched off, and so can be adjusted into a more comfortable viewing position. The 2.5-inch LCD screen folds out from the side and although it feels solidly built, the catch to open it is built for very small fingers and subsequently fiddly to use.

Most of the controls you will need are on the right-hand side of the camera, including the on/off switch, the telephoto rocker, the still photo shutter button and a switch for choosing whether to record your still shots to MiniDV tape or to the media card, more of which later. The covering on this side is a textured plastic which we found unpleasant to handle, but it does give a good grip.

### Small but fiddly

The various buttons have all been scaled down in line with the camera, but this makes them a little fiddly to use. The focus and menu buttons, in particular, are especially small and in an inconvenient position next to the viewfinder, so you will need to take care when using them.

The telephoto rocker has also been reduced in size, but perhaps more importantly it has been given very little resistance, so it takes some practice before you can take slow steady zoom ins.

Instead it is all too easy to go from a wide angle shot to a close up in an unexpected rush that will



leave your viewers reeling. The MiniDV tape slots into the underside of the camera, but the media card slips in next to the LCD screen. This card is not the SmartMedia card you might expect and which is used in the Sharp, but instead is a proprietary format known as MultiMediaCard.

This looks like SmartMedia in that it is square and flat, but is considerably smaller and as a proprietary format it is incompatible with any card readers you may have. Panasonic supplies you with a 4MB card as standard which will fit in 56 still shots.

The battery is the expected Lithium Ion block, and can be recharged in the supplied recharger. Alternatively the camera can be attached to the mains via the recharger.

Also included is a docking station containing most of the connections you would want. So there is composite video, s-video, a connection to download still pictures to the PC via the serial port and a headphone jack. DV-out is on the camera itself, but there is

no DV-in. In use, the camera did not handle as well as some of the others. We found the zoom to be too temperamental and thought it would take a lot of patient practice to learn to control it.

We also found that the digital stabiliser used in this camera was not as effective as in the other cameras. We had to work harder to eliminate camera wobble than with any of the other cameras, including the budget JVC.

### A matter of sound

We were not impressed by the quality of the sound. It was a little on the tinny side and had an unfortunate habit of picking up and amplifying certain sounds, such as the sound of peoples' feet as they walked along the pavement and up steps.

The Panasonic also picked up the breezes quite badly, as did quite a few of the other cameras, including the Canon XM1.

The quality of the images were fine but not outstanding, and certainly not as good as the Sharp, which is the same price. Like the

↑ **It's small which is handy for trips abroad, but you may sacrifice too much image and sound quality if you are looking for the best possible results.**

JVC, the image suffered from poor colour registration, making the images look washed out. This may have been because the time of day (we shot the images in the early evening as the sun was starting to come quite low over the buildings), but other cameras dealt with the conditions far better.

### PCPlus Verdict

#### PANASONIC NV-DS55B

##### ✓ FOR

→ Very small and lightweight

##### ✗ AGAINST

→ Fiddly buttons  
→ Screen hard to see in bright light

<b>Specifications</b> .....	<b>6</b>
<b>Quality</b> .....	<b>7</b>
<b>Performance</b> .....	<b>6</b>
<b>Value for money</b> .....	<b>6</b>
<b>OVERALL</b> .....	<b>6</b>

## Sharp VL-PD6

**PRICE** £1,000 **EX VAT** £851  
**SUPPLIER** Sharp  
**PHONE** 0800 262958  
**ONLINE** www.sharp.co.uk

**A beautifully-designed camera from Sharp that looks good, performs well and has been well thought through**

**S**harp is much like Sony in many ways, concentrating on producing well-designed products that make use of technologies developed in its own labs. The VL-PD6 is a beautifully designed camera that looks good and performs well.

The position of all the controls has been well thought out, it is comfortable in your hand and it takes some great footage.

### Pop-out viewfinder

The VL-PD6 uses the shoot format, so the viewfinder pulls out and pops up for a more comfortable viewing angle.

However, the quality of the LCD screen is so good that few will want to use the viewfinder. Sharp is well known for making high quality LCD panels of all sizes and for introducing refinements to existing screen technologies that make a marked improvement to the quality of the screen.

The LCD screen on this camera is by far the best we have seen on any digital camera, whether still or video. The image is pin-sharp, the colours vibrant and it copes extremely well in sunlight.

Some of the LCD screens in this test performed so badly in sunlight that we had no alternative but to use the viewfinder instead. This was certainly not the case with the Sharp as it performed well, even when we turned the camera towards the setting sun.

One unique selling point is that the screen can be detached from the camera. A cable can be bought as an optional extra that connects to the camera, while you hold the screen. This is not as pointless as it may at first appear. It is useful in certain circumstances, such as when you have the camera on a tripod, but want to check that it is capturing what you want without having to squint round the camera. The cable is around a metre and a half long, so is long enough to be

truly useful. Also on the screen are a set of buttons that only come into use when the cable is used. These are for playing back the tape and include play, pause, stop, fast forward and rewind buttons.

### Wired for sound

Also unlike any of the other cameras, the Sharp comes with an additional microphone that sits on the top of the camera.

This is much larger than any of the microphones on any of the other cameras, and because of its position on the top of the camera, rather than at the front, it does make it far easier to pick up any commentary being added by the user, as well as the ambient noise.

On some of the cameras we found that the ambient noise almost drowned out any commentary and after all little vocal notes from the user will help you to identify what you are filming at a later date.

We found the quality of the sound picked up to be excellent. It was able to pick up the full range of tones and it was clearer and

sharper than on many of the other cameras we tested.

Sharp has included a SmartMedia slot on the camera to record either still shots or video. Only a 4MB card is included, though, so you will not be able to store much video on it.

There is a combined composite video and s-video connection port with a proprietary port and special cable and a DV port, but it is DV-out only and Sharp, like every other manufacturer in this test, has not included a DV cable in the box. Nor does Sharp's image software, PixLab come as standard: you have to buy it separately.

### Image quality

The quality of the images was exceptionally good considering the relatively low price of the camera. At £1,000 it is the second cheapest in the test, and £500 cheaper than the camera to which it could be most closely compared in terms of features and the quality of design, namely the Sony PC100E. It captured great colours, and even coped extremely well with

↑ This well thought through camera has a host of features and the best LCD screen we have seen on any camera – digital or camcorder.

shooting towards the setting sun. We were impressed by the sharp image when the camera was zoomed in and found it extremely easy to handle.

Of all the cameras we looked at, including the Sony, the Sharp was the one we found most enjoyable to use.

### PCPlus Verdict

#### SHARP VL-PD6

- |                                                |                                                    |
|------------------------------------------------|----------------------------------------------------|
| <input checked="" type="checkbox"/> <b>FOR</b> | <input checked="" type="checkbox"/> <b>AGAINST</b> |
| → Great screen                                 | → No DV-in                                         |
| → Additional microphone                        |                                                    |
| → Good quality footage                         |                                                    |
| → Good price                                   |                                                    |

Specifications .....	8
Quality .....	10
Performance .....	10
Value for money .....	10
<b>OVERALL .....</b>	<b>10</b>





## Sony DCR-PC100E

**PRICE** £1,500 **EX VAT** £1,277

**SUPPLIER** Sony

**PHONE** 0990 111999

**ONLINE** www.sony.co.uk

**Sony comes up with the goods again – this is a well-featured, well-made camera which produces quality results**

**T**here is a certain something about Sony products that never fails to impress. They are simply better designed and better made than almost any other rival products. So we were not disappointed when we took the PC100E out of its box. It has the only megapixel CCD of the ones we tested, which in turn gives it stunning video capture and an 1,152 x 864 resolution for stills.

Sony has included a second kind of media with the camera: a Memory Stick for recording still images. Memory Stick is Sony's own technology, developed as a rival to CompactFlash and SmartMedia, and is intended for use in any number of devices. A 4MB card is supplied as standard, enough to store 25 shots.

To transfer the still images to the PC, you will need to use the supplied Memory Stick reader which connected via the serial port. It is a little cumbersome to use, and obviously very slow compared to DV or even USB. However, it does save you time in the long run trying to locate still images on the DV tape. Sony does produce a Memory Stick floppy disk reader if you don't mind shelling out an extra £70.

### Boxy but nice

As it is in the upright format, the PC100E is a boxy little number with all the elements tucking into the main body. The DV tape slides into the very heart of the machine under the holding strap, while the left-hand side of the machine is taken up with the screen and the battery. This frees up the back of the machine to hold a few of the vital controls, such as the standby button, the mode switch, the exposure and backlight buttons.

All these can easily be operated with your thumb. Rather niftily, buttons to control the playback



from the tape are also on the back of the machine under a flat cover but they only become apparent when you select playback mode and they light up.

The most important controls are towards the top of the camera, to the right and so are conveniently under your fingertips as you hold the camera. Here, you will find the zoom lens rocker and the still shot button. Tucked under the screen is another series of buttons controlling the Memory Stick and the tape.

So there are buttons to play back the still images, as well as to index and delete them. And there are other useful buttons such as one to find the end of the tape, the menu button and the digital effects button.

The battery is Sony's own InfoLithium affair. This does not only display the amount of charge in the battery on a sliding scale, but instead gives you a read-out of the number of minutes of use remaining on the battery. This seems to be reasonably accurate and will give you a good idea of

how much filming you can cram in before the battery dies. Unlike the other cameras, the battery in the PC100E can be recharged while it is in the camera. All the others require you to put it in a separate battery charger. All the connections are on the camera itself. There are the usual s-video, composite video and DV-out connections, but also, unusually, DV-in. There are also sockets for an external microphone and headphones, unlike some of the cheaper cameras in the test.

### User friendly

The PC100E is a pleasure to use. All the controls are easily placed and the camera feels comfortable in your hand. The wealth of extra features make you think that all cameras should be like this.

In the final analysis it is the quality of the film that makes or breaks this camera and the PC100E certainly does not disappoint. The combination of a very good Carl Zeiss lens and a mega pixel CCD together produce wonderful results. We were impressed by both the vibrant colours and by the

↑ **Sony comes up trumps again with this well-specified, top quality performer. But it will cost you.**

sharpness of the image. Nor did the sound quality disappoint. Although it did pick up a certain amount of distortion from the wind, the sound was well rounded.

The Sony is an excellent camera in every respect. It may cost considerably more than its nearest rival, the Sharp VL-PD6, but the addition of a DV-in port makes it worth paying the extra if you can.

### PCPlus Verdict

#### SONY DCR-PC100E

✓ FOR	✗ AGAINST
→ DV-in	→ Price
→ Great quality	
→ Brilliant design	
→ Feature packed	

Specifications .....	10
Quality .....	10
Performance .....	9
Value for money .....	7
<b>OVERALL .....</b>	<b>9</b>



## → Digicamcorders head-to-head

With different models at different prices, entry-level units to professional quality hardware, there's never been a better time to get into making movies on your PC



	CANON	JVC	PANASONIC	SHARP	SONY
Model	XM-1	GR-DVL300	NV-DS55B	VL-PD6	DCR-PC100E
Price inc VAT	£1,499	£850	£1,000	£1,000	£1,500
Price ex VAT	£1,276	£723	£851	£851	£1,277
Supplier	Canon	JVC	Panasonic	Sharp	Sony
Phone number	0800 616417	020 8208 7654	08705 357357	0800 262958	0990 111999

### SPECIFICATIONS

Dimensions	117 x 135 x 272mm	80 x 96 x 170mm	47 x 94 x 129mm	73 x 104 x 137mm	61 x 127 x 123mm
Weight	1250g	420g	490g	580g	540g
CCD	320,000 pixels (x3)	800,000 pixels	570,000 pixels	810,000 pixels	1,070,000 pixels
Optical Zoom	20X	10X	15X	10X	10X
Digital Zoom	100X	100X	10X (150X)	20X (200X)	12X (120X)
DV-in	✓	✗	✗	✗	✓
LCD size	2.5-inch	3.5-inch	2.5-inch	2.5-inch	2.5-inch
Removable media type	None	None	MultiMediaCard	SmartMedia	MemoryStick
Still image resolution	640 x 480	768 x 552	640 x 480	640 x 480	1152 x 864
Stabiliser	Optical	Digital	Digital	Digital	Digital

### VERDICT

7

6

6

10

9

## → What is the Digital Video (DV) standard?

The term DV is often banded about, but exactly what does it mean and what do you get for your money?

DV, or Digital Video to be precise, is slapped all over digital camcorders. Although it sounds like a fairly generic term, DV is actually a standard encompassing the compression and recording of the video, audio recording and the transfer of both to a PC.

### A MATTER OF STANDARDS

DV uses a relatively high compression rate that, unlike some of its analog counterparts, does not lose as much information when compressing the video files.

This ensures that no quality is lost when the video is actually recorded on to the MiniDV tape, but neither does it take up too much space on the tape.

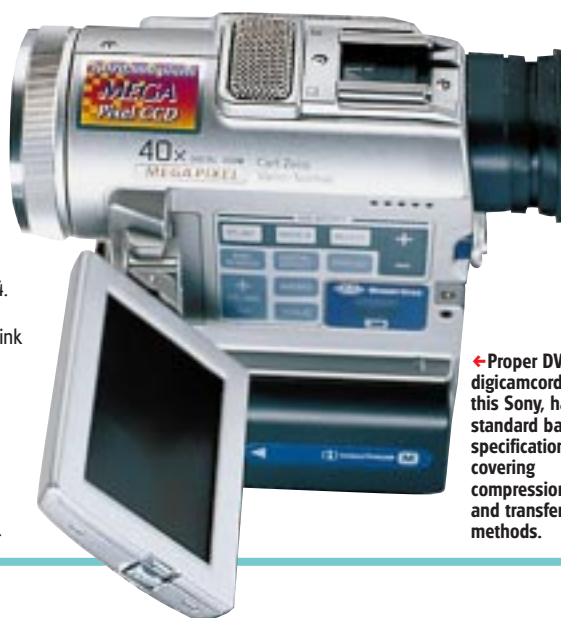
Second, all DV camcorders record in PCM stereo. This is a 16-bit standard that should give you broadcast quality sound, but again the

compression algorithms used can squish it into a small file.

### DOING TRANSFERS

Finally DV uses IEEE 1394 as its transfer method. 1394 was first developed by Apple and christened Firewire. It was then adopted as a universal standard and called IEEE 1394. When Sony started using it on its camcorders, the company renamed it iLink and many other manufacturers have followed suit.

As the standard has become intrinsically linked with DV camcorders, so the port itself is often referred to as a DV port. However, the name is irrelevant – just look for the little square four-pin hole and you'll be okay.



← Proper DV digicamcorders, like this Sony, have a standard base specification, covering compression, sound and transfer methods.

# PCPlus VERDICT

Five digital camcorders tested, five possible alternatives for entry-level users to the professional revealed. But which is the best camcorder for you? We reveal your best options below

## Analysis

### WHICH DIGITAL CAMCORDER?

How do you choose one camera over another? What kind of compromises can you expect on price? Adele has a good look at your options

What should you look for? What do you have to pay extra for? When buying a digital camera, you will, of course, want to have great image quality. But there's more to consider.

#### Editing it

As a PC users you should also bear in mind that once you have recorded your footage, you will want to download it to your PC and edit it. Some cameras come with editing software, others do not. So be careful to check what you get before you shell out your money.

#### DV capture

Also bear in mind that if you intend to make the most of the DV port, as you should if you are going for a digital camcorder, then you will need both a DV capture card and a DV cable, since none of the cameras reviewed here included a cable in the package.

#### DV-in

Once you have edited your footage, you may also want to save it back to DV tape. DV tape is the most cost effective way of saving your footage. In this case look for a camera with DV-in. Also remember to check that your PC has the firepower necessary for the job. A big hard drive is a necessity – see Can your PC handle it? on page 63 for fuller details.



✦ The camera may look good but you'll also need to consider editing software and DV-in for tape playback.

### ➔ Sharp VL-PD6

**PRICE** £1,000 **EX VAT** £851 **SUPPLIER**

Sharp **PHONE** 0800 262958

**ONLINE** www.sharp.co.uk

Deciding on an Editor's Choice was a close run thing between the Sharp VL-PD6 and the Sony DCR-PC100E. In the end the Sharp got the upper hand, despite its lack of DV-in.

It shot some excellent footage and we were particularly impressed with little extras that make all the difference, such as the additional microphone, the wonderful LCD screen and the detachability of the screen.

In terms of price, the JVC GR-DVL300 cannot be beaten. It will not win any prizes for picture quality, although for the price it is a fair performer. Its lack of features will also start to annoy those who expect a bit more from their purchase. Its ease of use and unfussy approach will win it fans among both rank beginners and those that do not want anything but a point and shoot camera.

The overall winner of the Best Performer award has to be the Sony DCR-PC100E simply because it is



**PCPlus**  
**EDITOR'S**  
**CHOICE**

the best all-round camera to include DV-in. It was easy to handle, produced superb quality video and had all the features you would want in a camera at this price. Although it is much cheaper than the Canon it produces a comparable picture and was far more manageable for the more inexperienced user.

**PCPlus Verdict .....10/10**



#### RECOMMENDED

### ➔ Sony DCR-PC100E

**PRICE** £1,500 **EX VAT** £1,277 **SUPPLIER** Sony  
**PHONE** 0990 111999 **ONLINE** www.sony.co.uk

Sony's machine came within a whisker of winning an award, because of its excellent specifications and end results. We are impressed with its stunning video capture performance – 1,152 x 864 is a resolution not to be sniffed at. This, plus a very good lens, produced some excellent quality video. The only thing that let it down was the price – it is a tad expensive.

**PCPlus Verdict .....9/10**



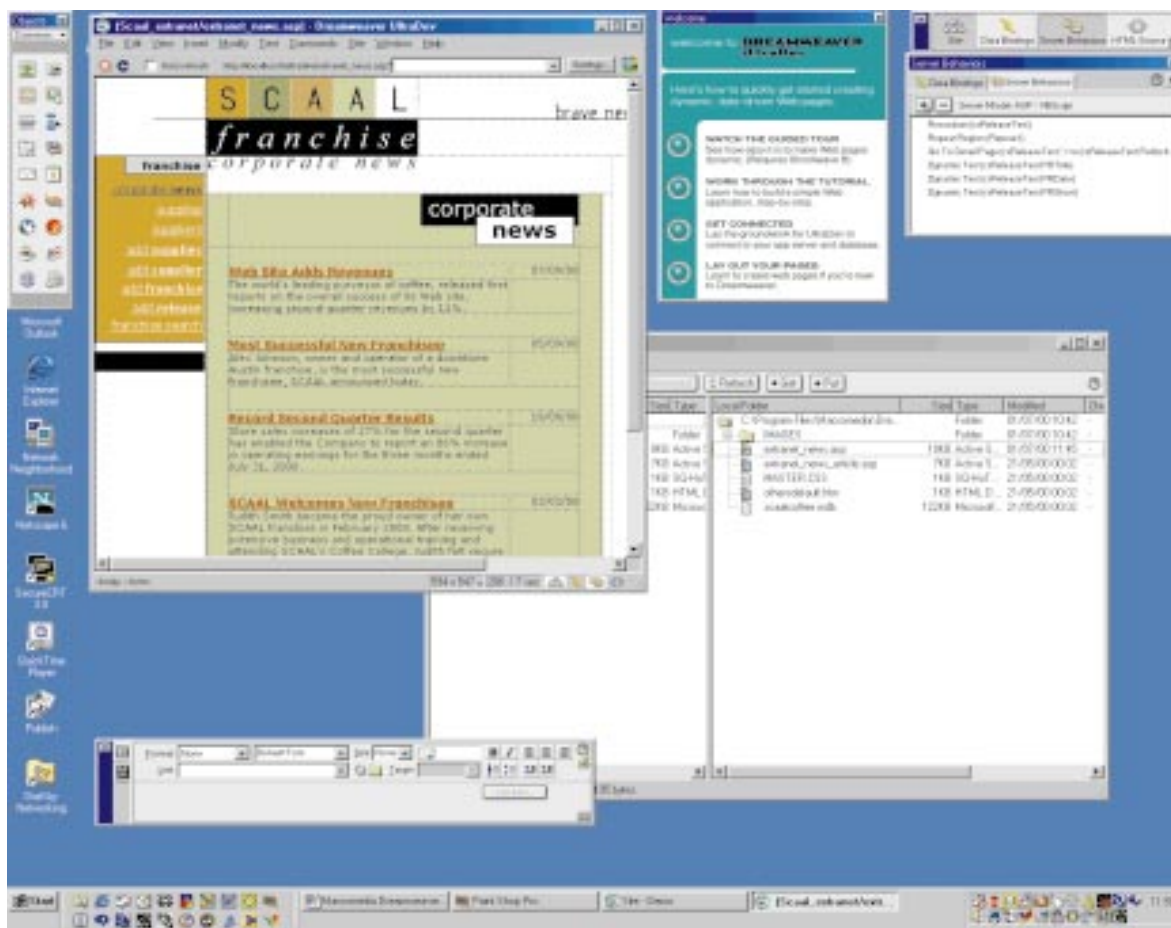
#### ENTRY LEVEL

### ➔ JVC GR-DVL300

**PRICE** £850 **EX VAT** £723 **SUPPLIER** JVC  
**PHONE** 020 8208 7654

Entry-level means you're going to have to accept a few compromises along the way, compared to the best of the bunch reviewed here. Features tend to be kept to a minimum and the JVC is no exception. However we found performance to be fair, good for point-and-shoot work although film quality was a bit lacking. Sound was sludgy and you may find yourself upgrading quickly.

**PCPlus Verdict .....6/10**



◀ You'll need the largest screen you can possibly find to use Dreamweaver UltraDev to its full... even with just the basic set of palettes it's crowded on a 1,280 x 1,024 screen. We're working with a live data view here, and the table contents are straight out of a database.

## WEB DEVELOPMENT

# Macromedia Dreamweaver UltraDev

**PRICE** £469 **EX VAT** £399 **SUPPLIER** Macromedia **PHONE** 01344 458 600 **ONLINE** [www.macromedia.com](http://www.macromedia.com)

**Macromedia's latest Web development tool merges Drumbeat with Dreamweaver. Can the most powerful HTML editor around really create Web applications? Simon Bisson takes a look**

If you're building a Web site today, you're going to need to turn it into an application. Databases and application servers are turning the Internet into a dynamic place, where information is delivered when and where you want it. The new Web services are technologies like Active Server Pages (ASP) and Java Server Pages (JSP), where server side scripts are used to control the content delivered to the Web browser. Unfortunately, they're not the easiest technologies to work with – especially as there aren't many Web design packages that are able to work with them.

Macromedia's Dreamweaver has long been seen as the best Web design tool around. The recent release of version 3.0 just confirmed its position at the top of the tree. You can do just about anything you need to do on a Web site, from designing CSS style sheets to including complex DHTML elements on your pages.

### System requirements

PI 120, Win95/98/NT 4.0,  
48MB RAM

### Tested on

PII 300, WinNT 4.0,  
128MB RAM; PIII500,  
Win98, 128MB RAM

### Extra information

Upgrade from Drumbeat,  
£116; upgrade from  
Dreamweaver 3,  
£234 – 30-day  
downloadable trial

But one thing remains missing from Dreamweaver: support for server side scripting. You can use the round-trip HTML editor built into Dreamweaver to edit scripts, but there is no way to actually see the effects of your code on the page design. If you are dealing with dynamic content generated by database queries, then a good looking page can be completely wrecked by variations in the data in your database.

Last year, Macromedia bought several companies, including Elemental Software, which produced a WYSIWYG development tool for ASP and JSP called Drumbeat. This enables you to create database-driven Web sites by dragging and dropping components on to your page layout, and designing pages around snapshots of live data. Together with its themes and powerful layout tools, you can almost treat Drumbeat as a site development tool like NetObjects Fusion – a tool that can also

build e-commerce sites. Macromedia recently announced that it would no longer be supporting Drumbeat, much to the annoyance of its dedicated developer community. However, this was not a case of one company killing a rival's product – the Drumbeat development team joined the Dreamweaver team to create a new version of Dreamweaver capable of developing data-driven Web sites: Dreamweaver UltraDev.

Based on Dreamweaver 3.0, UltraDev will be familiar to Dreamweaver users. In fact, there's nothing to stop you using UltraDev to create purely static pages, and we'd actually see this as one of its strengths. Tools like Microsoft's Visual InterDev make it difficult for page designers, and are really targeted at pure developers. UltraDev is very much a designer's tool and takes full advantage of its Dreamweaver heritage. We're not going to review the Dreamweaver



aspects of UltraDev because there's very little change from Dreamweaver 3.0.

The biggest development in UltraDev is its live data design views. You'll need to be working with the remote server you're using to host your site to use this feature, as it actually runs the page. Of course, for test and development purposes, there's no reason why you can't work with a local Web server like Windows Personal Web Server. You'll need to make sure that UltraDev is pointing to the root directory of your site. Once that's done, UltraDev requires a connection to a database. This can be an ODBC connection for an ASP site, JDBC for JSP (UltraDev comes with a JDBC run-time) or a Cold Fusion data connection.

Once you've created a database connection and its associated record sets, you can use UltraDev's data binding inspector to explore the data you're using, and to add dynamic content to a page. UltraDev lets you add dynamic content anywhere in a page's HTML – including in the attributes of HTML elements. With the ability to dynamically generate HTML as well as content, you can use UltraDev to handle dynamic images and even modify the actions of a client-side behaviour.

## How it works

You'll need to understand how UltraDev works with data because it can be easy to make mistakes when creating data-driven Web applications. We found the tutorials provided a useful start – and it's well worth spending some time working your way through them. These help you get to grips with the Master and Detail pages used to handle database connections. A Master page contains pointers to the more detailed information held on a Detail page.

If you've used the database publishing tools in NetObjects Fusion you'll find this technique familiar. This is an excellent way of exploring hierarchies of data, but the world doesn't always work that way! UltraDev doesn't force you into working only with general database queries, and it's quite possible to create sites that personalise generated pages based on database queries.

If you've never built a dynamic Web site before, then you probably won't have all the tools you need to create a site. UltraDev comes bundled with most of the

## → Web application servers explained

**UltraDev provides a link between the Web designer and the application servers that deliver a Web application**

Application servers are the glue that holds the modern Internet together. Sitting behind the front-end Web servers of any large Web site, application servers handle all the dirty work, linking the Web to the complex world of the modern business.

Application servers are large applications in their own right, able to host your own software components, and manage connections to the Web server and databases. Using one enables Web application developers to separate their business logic from the data and the HTML – in a traditional multi-tier client-server application. Where application servers come into their own is with sites

designed to handle millions of users. A good server will scale and cluster, enabling you to distribute your application across many computers, and protecting you from crashes and hardware failures.

Probably the best-known application server in use is IBM's WebSphere. This is a set of tools that enable you to create server-side Java applications, and can be worked on with Dreamweaver UltraDev. Other application servers in common use are Sun's SynerJ, ATG's Dynamo and BEA's WebLogic. These are large, expensive pieces of software – but if you want to build an application server on a budget there are alternatives. If you want to take a

Microsoft route, the MTS object broker in conjunction with Internet Information Server and ASP is a proven tool, which can work well. Alternatively, an open source solution can be found with either the JServ Java servlet engine for Apache, or the Enhydra application server.

One of the big buzzwords in e-business today is Enterprise Information Integration. In an EAI system Web application servers use XML to link many different computer systems and businesses together – enabling a much bigger flow of information. EAI is a powerful tool, and forms the basis of many of the big B2B exchanges that are currently being developed.

features you'll need, including a copy of IBM's WebSphere Java application server. If you want to start work with JSP and servlet driven Web sites, then installing this will give you a head start. Alternatively, there's a development version of Allaire's Cold Fusion Server, as well as its HomeSite HTML editor. ASP developers will need to install the Microsoft Personal Web Server that comes bundled with Windows 98 and the NT 4.0 Option Pack.

There's still a place for using Visual InterDev or Cold Fusion studio if you want to construct complex business logic on your server side scripts. E-commerce developers will have to wait a while before Macromedia releases its shopping cart add-on. You might think this means that Macromedia was premature in releasing UltraDev, but we don't think so – the core database connectivity functionality is there, as is the key ability to round-trip server side code between different development environments.

Where UltraDev really shows promise is its reliance on the extensible Macromedia Dreamweaver framework. If you're willing to spend a little development time, you can take your existing JSP or ASP code and turn it into a new server behaviour, ready for reuse in all your UltraDev pages and

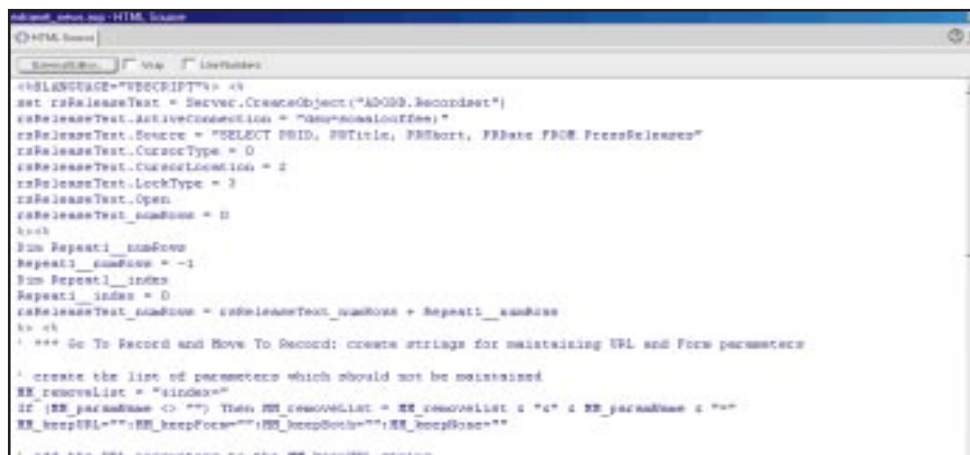
↓ You don't need to use UltraDev as a WYSIWYG design tool – it's just as easy to work directly with the scripts it has generated. And, thanks to Dreamweaver's roundtrip HTML tools, any changes you make will be displayed as soon as you've made them...

sites. You can also share your behaviours with other UltraDev users by turning them into UltraDev extensions and then uploading them to the Macromedia Exchange Web site at [exchange.macromedia.com](http://exchange.macromedia.com). And you'll be able to use the Exchange to download Dreamweaver and UltraDev extensions like Nokia's WML Toolkit, which will help you create more complex pages and sites.

Whilst supporting ASP, JSP and Cold Fusion is enough for most purposes, we'd liked to have seen support for PHP – especially as Linux-based Web servers are finding their place in the SME marketplace for Intranet and Internet purposes. There is a ray of hope for the Apache developer though, as Macromedia or third parties could develop a PHP extension using the Dreamweaver extensions environment. It's probably a good idea to check for new features on Macromedia's Exchange Web site.

Dreamweaver UltraDev is one of the most powerful Web development tools we've found to date. Easy to understand, and able to give designers the ability to create dynamically generated Web sites, it's also flexible enough to challenge the hard-core server programmer.

**Simon Bisson**



## PCPlus Verdict

### MACROMEDIA DREAMWEAVER ULTRADEV

- |                                                                                                                                                                     |                                                                                                                                                                     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>✓ <b>FOR</b></p> <ul style="list-style-type: none"> <li>→ Design dynamic Web applications</li> <li>→ View live data</li> <li>→ Add your own functions</li> </ul> | <p>✗ <b>AGAINST</b></p> <ul style="list-style-type: none"> <li>→ No support for PHP</li> <li>→ Adding new functionality requires good development skills</li> </ul> |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|

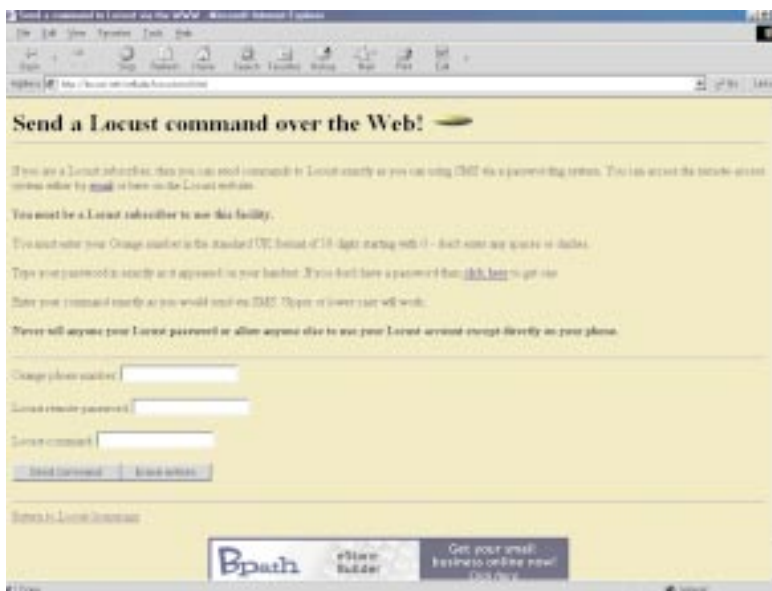
Specification.....	10
Quality.....	9
Performance.....	9
Value for money.....	8

**OVERALL .....9**

# E-mailing a mobile phone

Text messaging between mobiles is huge. Now you can add in the Net...

**E**-mail has been the communication tool of the office place for years and many of us would be lost without it. In a similar way, over 30 million of us now own a mobile phone. Anyone with a mobile can send a text message but you can also send and receive e-mails on your phone using the SMS (System Management Service) system. The only disadvantage is an SMS message is restricted to 160 characters, although some systems can get around this.



[www.locust.net](http://www.locust.net)

## Locust Cellular Services

A site packed with features and good value for money

**L**ocust has been running for a number of years and was probably the first e-mail to SMS service of its kind. Originally available to only those on the Orange network, thanks to the implementation of internetwork SMS last year, users of all four mobile networks should be able to use the service.

Locust is a subscription-based service and at £3 a month, represents outstanding value. There is no limit to the number of e-mails you can receive and what's more, you can send e-mail as an SMS from your phone with complete ease. Once you have subscribed to the service you are given an

↑ To save you money in SMS charges, all commands can be entered via a Web interface.

e-mail address, which is in the format of 07970123456@locust.co.uk, but for a one off £5 fee, you can choose your own username rather than your phone number. As well as SMS to e-mail, locust offers a range of information services, such as traffic and weather reports, as well as lottery results and so on. Mailing lists and chat channels are also included and all commands can be sent as an SMS.

If there is one problem, it's that at times the service becomes overloaded and some delays can occur, although so far nothing like the scale of Genie. Fortunately, when upgrades to the hardware are performed or scheduled downtimes for maintenance, you're warned in plenty of time, so you are aware of delays.

Locust may not be as professional looking as some of the other sites here, but for value for money and features, you really can't beat it. We wouldn't rely on it for critical mail, but what's available is exceptionally well done.

**PCPlus Verdict 9/10**



← Genie enables you to receive e-mail on your phone, but sadly you can't reply.

[www.genie.co.uk](http://www.genie.co.uk)

## Genie

Genie used to be an exclusive service for BT Cellnet customers, but last year it relaunched itself an Internet Portal. The site has expanded – it now offers news, text messaging, e-mail and even a dictation line.

G-mail is an e-mail to SMS service that anyone can use, and once you've registered you have an e-mail address along the lines of username@sms.genie.co.uk. Any

e-mails sent to this address will then arrive as an SMS on your phone, although messages are restricted to 140 characters as an xxx is appended to the end of the message. Downsides are that the site is slow, messages sometimes get delayed for hours or even days and you can't reply to e-mails from your phone.

**PCPlus Verdict 7/10**



← While N Systems is professional looking, the subscription charges are high.

[www.n-systems.com/sms/](http://www.n-systems.com/sms/)

## N Systems

This is another subscription-based service which enables you to send and receive e-mails on your phone, send faxes from your phone as SMS and send SMS to other users from a Web site gateway.

Your e-mail address is in the format 07970123456.sms@n-systems.com. If you subscribe to the advanced service, then you can even have this e-mail address make use of your existing

domain. Large messages are split across several SMS and each has a part number such as 1/3 so that you know in which order to read them. A range of tariffs exist to suit your usage pattern, but with a connection fee of £15 and a £12 a month subscription per month to send 160 messages it's not the cheapest solution available.

**PCPlus Verdict 6/10**



← A free service to send e-mail or faxes via SMS, which is fast and efficient.

[www.andrews-arnold.co.uk/faxtext/](http://www.andrews-arnold.co.uk/faxtext/)

## Andrews and Arnold

This service is different to the other three in that it enables you to send an e-mail as a SMS from your phone, but unfortunately not the other way around. Recipients of your e-mails are also restricted – they unable to reply to your messages.

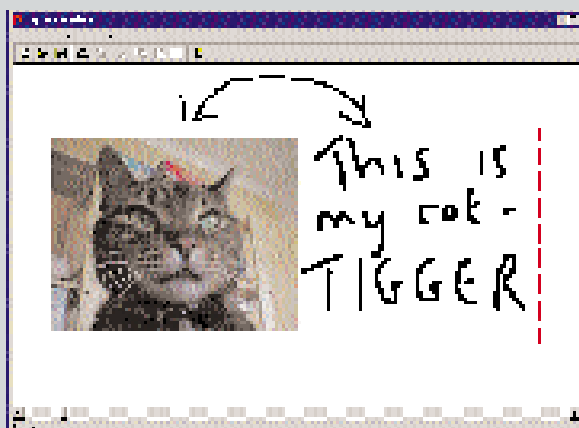
The service is open to all network users and is free of charge to use. To send an e-mail message you simply send an SMS to 07973577510, which is

an Orange number, although it should work for all networks.

To send an e-mail, simply send an SMS using the e-mail address as the first part of the message, followed by a space.

Likewise, you can send faxes in the same way by entering the fax number, then a space, then your message.

**PCPlus Verdict 7/10**



## DRAWING AND APPLICATION CONTROL

# Enotate for Palm OS

**PRICE** \$50 **SUPPLIER** Informal Software  
**ONLINE** [www.informal.com](http://www.informal.com)

**Enotate turns your Palm PDA into a PC drawing and application control centre**

**E**notate is an application that turns your Palm OS hand-held into a data input medium for a PC. It enables you to draw on the Palm's screen and have the results appear on the PC's screen, and perform functions within some desktop applications.

### Requirements

Hand-held running the Palm operating system (Palm or TRG Pro), PC connectivity for hand-held, PC for Enotate software.

### Tested on Palm V

**Extra information**  
Does not work with Handspring Visor or Palm OS 3.5 running in greyscale

At first, the idea may sound odd, but there are some useful possibilities. Enotate comes with its own desktop application. This can either present a blank sheet or open image files in a number of formats (.bmp, .jpg, .pcx and .tif). The blank screen can be used to sketch freehand.

Suddenly it is easy to draw a map of how to get to your office or mock up a product idea direct to the PC's screen.

← **Enotate comes with its own software for annotating images ready for faxing or e-mailing on.**

Images can be annotated and saved; scans of printed documents can be marked up if changes are

required; and photos can have arrows and other markers and text drawn nearby. There are various pen sizes and ink colours available. These alterations are easy to save, e-mail and fax. Changing a wedding invitation, product sketch or other document that is printed remotely no longer requires lengthy explanations of what is needed over the phone.

In addition, the software supports Word 97 and above and PowerPoint 97 and above. In both cases, it can be used to annotate existing documents and remotely control the application.

## Installing Enotate

Installation is a two stage process, with the Enotate application going on to your

PC first and the relevant software being copied to your Palm device via a HotSync. Use is intuitive, partly because of the small feature set on-board.

There are some issues with Enotate as it currently stands: The small feature set means there is competition from pen tablets; support only for Word and PowerPoint in addition to its own application, means Enotate is hardly wide-ranging; and it is unfortunate that the current version of Enotate does not work with Handspring's Visor.

The idea is a clever one that has potential, particularly if Informal Software increases the range of third party software supported, and wireless PC to Palm connectivity becomes commonplace.

**Sandra Vogel**

## PCPlus Verdict

### ENOTATE FOR PALM OS

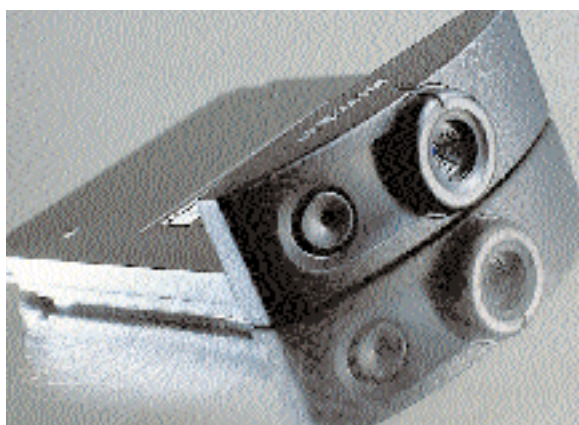
#### ✓ FOR

- Easy-to-use
- Occupies very little space on the hand-held

#### ✗ AGAINST

- Too few third party applications supported

Specification .....	6
Quality .....	7
Performance .....	8
Value for money .....	7
<b>OVERALL .....</b>	<b>7</b>



## DIGITAL CAMERA

# EyeModule digital camera for Visor

**PRICE** \$150 **SUPPLIER** Ideo **ONLINE** [www.handspring.com](http://www.handspring.com)  
**PHONE** 020 7309 0734

**A tiny camera for your Handspring Visor that is both fun and functional**

**W**hen Handspring launched its Visor, it promised numerous expansion modules would appear for the Springboard expansion slot on the back of the machine. The EyeModule

### Requirements

Handspring Visor with Springboard socket. Visor docking station and cables for transfer of images to PC. CD-ROM drive for PC software installation

### Tested on Handspring Visor Deluxe

**Extra information**  
Currently only available online

digital camera is the first such expansion module to hit the market.

The unit itself is tiny – about half way between a PC Card and a Compact Flash card. No software installation is required to use it, just put the EyeModule into the slot and in a couple of seconds a realtime image appears on screen. The lens is at the front of the EyeModule, and moving the Visor around as if it were a **Star Trek** tricorder causes the image to change. The shutter is on the camera itself – depress it and you take a picture that you can save

← **The Eyemodule camera is the first Visor add-on.**

or discard. There are no focusing adjustments or alterations for lighting

conditions – the ability to point and click are the only skills you need.

## Saving images

Images can be saved at three resolutions: 160 x 120 and 320 x 240 in black and white; and 320 x 240 in colour. The latter does not display itself on the Visor screen as a colour image, but will do so when transferred to a PC.

A self timer lets you get yourself into the picture and you can name images, group them into categories and attach notes to them on the Visor. The Visor software also enables you to zoom into images and beam them to other Visor owners. But the emphasis is on simplicity and, as a result, the feature set is limited.

Images are transferred to your PC during a HotSync, and are converted to JPEG format during the process. An application, the Eyemodule MediaCentre, enables you to organise, view and manipulate images in various ways.

While the camera is fun and extremely easy-to-use, the images it takes are not particularly high quality.

You could get away with putting them at a Web site or e-mailing them to friends, but they are not suitable as a permanent record of memorable events or as printable shots.

The good news is that you can cram a lot of images into your Visor. The 5MB of free memory can store over 500 black and white images at 320 x 240 and over 25 images at 160 x 120 in colour.

**Sandra Vogel**

## PCPlus Verdict

### EYEMODULE CAMERA

#### ✓ FOR

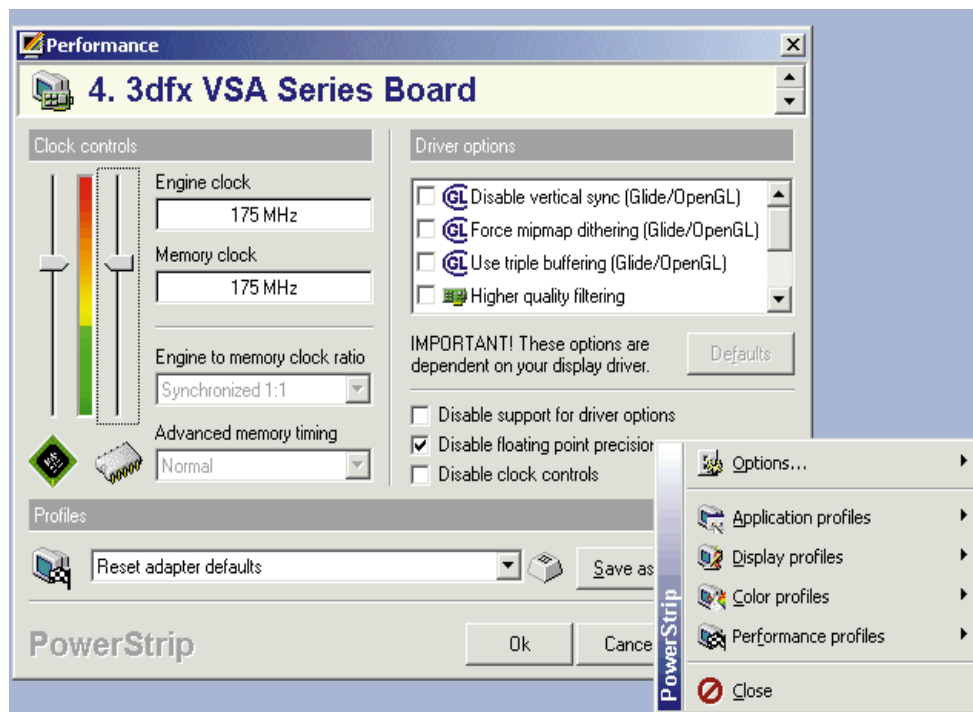
- Very portable
- Fun and easy-to-use

#### ✗ AGAINST

- Images not very high-quality

Specification .....	7
Quality .....	8
Performance .....	9
Value for money .....	8
<b>OVERALL .....</b>	<b>8</b>





## PROGRAMMING TOOLKIT

# Entech TVicHW32 4.0

**PRICE** \$99 **SUPPLIER** EnTech **ONLINE** [www.entechtaiwan.com/tools.htm](http://www.entechtaiwan.com/tools.htm)

**Get direct access to hardware devices with minimum effort**

**T** VichW32 is one of several low-level programming toolkits created by Entech. It includes device drivers which enable any 32-bit Windows application to communicate directly with hardware devices. 'Hitting the metal' (a common programming term for direct hardware access) is especially problematic under Windows NT unless you're prepared to go to the lengths of writing specialised device drivers. In order to create a driver, you need to use Microsoft's somewhat complex Device Driver Kit, otherwise known as the DDK. By making use of TVicHW32, the DDK is not required because all the hard work has already been done for you.

TVicHW32 has been written in such a way that it's usable from most general purpose programming languages. There's a pair of tiny VXD and SYS device drivers for operation under Windows 9x and NT, respectively. An application that wishes to implement direct hardware access communicates with a small 44KB DLL called TVICHW32.DLL.

Because this is a standard DLL, you can call into it from Visual C++, C++Builder or even Visual Basic. Entech provides the necessary .BAS file which

contains all the Visual Basic declarations that are needed to communicate directly with the DLL. For Delphi users, there are a set of Pascal files which, likewise, simplify communication with the DLL. All 32-bit versions of C++Builder and Delphi are supported.

## Installation

The appropriate driver is loaded on-the-fly by the application under both Windows 9x and NT, which means that you don't need to make any persistent configuration changes to the operating system and installation issues are greatly simplified – just install the drivers and DLL into the same directory as the application itself.

On the API side, there are assorted API routines in various categories. Thus, you can map a chunk of physical (and possibly I/O mapped) memory into the address space of the calling application, making it easier to access specialised hardware such as security dongles, custom peripherals and so forth. There is a set of functions which provide direct I/O port access to a designated physical port address.

Another set of routines has been written to provide optimised access to the FIFO (first-in, first-out) buffers typically

used by serial controller chips. This enables the entire contents of a buffer to be read via a single call. Another, rather frightening, option enables you to field hardware interrupts directly from a 32-bit application – IRQ 1 through to 15 are supported, but you're not allowed access to IRQ0 (the system timer) which is probably just as well!

## Access to ports

There are a set of routines for providing direct access to parallel printer ports, enabling you to determine how many printer ports are installed on a PC. You can also lock and unlock access to a specified printer port so that it's temporarily unavailable to other applications. At a lower level, there

← Entech's PowerStrip is an example of the sort of tool that it's possible to create with the technology in TVICHW32. But be warned – you need to know what you're doing!

are a couple of GetPin and SetPin functions which can be used to get, or set, the logic level of a particular bit on the parallel printer port. It should

go without saying that you wouldn't typically use these functions to find some esoteric way of accessing your printer, but you would use them to interact with custom hardware devices through high-speed, bi-directional printer ports.

## New enhancements

New enhancements in the latest version of TVicHW32 include a routine which lets you interrogate a PC hard disk to determine the disk manufacturer's serial number. This is something which is invaluable for protecting software from being illegally copied from one machine to another.

The package includes a number of ready to compile demo programs for Visual Basic, Delphi, C++Builder and Visual C++. All-in-all, TVicHW32 is an impressive package which provides a lot of functionality with very little code. To see what can be done using TVicHW32, check out some of the other downloadable Entech applications and demos such as MULTIRES (a replacement for Microsoft's QuickRes) and the intriguing PowerStrip utility.

**Dave Jewell**

## PCPlus Verdict

### ENTECH TVICHW32 4.0

✓ FOR	✗ AGAINST
→ A versatile direct hardware access toolkit which obviates the need for the Windows DDK	→ Not a tool for the beginner. You really need to know what you're doing

Specifications .....	8
Quality .....	8
Value for money .....	9
Performance .....	7

**OVERALL .....**8



## WEB SERVER SOFTWARE

# MGI ZOOM Server

**PRICE** £399 for 50 image SOHO version **EX VAT** £340 **SUPPLIER** MGI

**PHONE** 01908 278 100 **ONLINE** [www.mgisoft.com](http://www.mgisoft.com) **PUBLISHER** [ZoomServer@uk.mgisoft.com](mailto:ZoomServer@uk.mgisoft.com)

**Are your customers' online shopping experiences frustrating? MGI's ZOOM Server promises an easier and more valuable way of browsing images. But does the software live up to its promises?**

For some people, shopping has been elevated to an art form. They can spend hour upon hour examining and debating with friends the relative merits of a particular buy. One of the factors slowing down the take up of online buying has been the lack of the shopping experience – it's hard to take a good look at what you're planning to buy online.

### Take a closer look

MGI has attempted to make the lot of the online shopper a far less speculative experience by introducing its ZOOM Server to provide an easier way of looking at your prospective buy. If you've browsed through the pages of a typical e-commerce site, you'll have experienced a common problem: either the image's files are so big that it takes an age for them to upload to your screen, or they are at such a low resolution that you can't really see what you're buying. The ZOOM Server software enables image content on the server to be held in such a way that you can zoom into the image or pan across wide screen shots. You can even rotate the picture if you want to see something upside down.

ZOOM Server uses the FlashPix open standard. This enables a collection of

incremental images to deliver the highest possible resolution for the output required. ZOOM Server also uses Internet Imaging Protocol (IIP) to improve image streaming to your browser. When the two work in conjunction, they enable you to pan and zoom in and out of a Web graphic using a standard set of controls.

The images don't need to have a viewer to work but using the downloadable one increases the performance and facilities available from the content of the ZOOM Server. The Java Universal ZOOM Viewer can be downloaded and is used in a Java-enabled browser to view panning images and panoramas, to rotate image objects, to zoom and to use hotspot linking to URLs embedded in the ZOOM Content. You can download the Plug-in and ActiveX ZOOM Viewers that support high-resolution printing and multimedia content, such as audio and video.

### Installation

We wanted to try out ZOOM on our existing NT4 Server and discovered that the installation required a more recent version of some of the in-built services and a later version of Internet Explorer than we had installed.

Rather than go through a series of upgrades, we decided to bite the bullet

and install Windows 2000 Server. This was much simpler than expected and installed on our test machine in no time. With the IE5 and Internet Information Services (IIS) installed by default, we were ready to install Zoom. Installation is straightforward and only requires filling in some user information and the CD key. You can buy and download the Server from MGI online – it will send you a product key by e-mail.

### The next step

Next, enter the Host information. This consists of an IP address or name. This is in the format 255.255.255.255 or yourname.com without the http://www

← Take a look at the online catalogue for Bloomingdale's ([www.bloomingdales.com](http://www.bloomingdales.com)) in order to try out one of Zoom's Servers.

bit at the front. We chose to use the default port address but if this is already in use on your server it can be changed to a free one. That's about it.

The next time you restart the system, the Zoom Server services will be up-and-running. The server defaults to a Web page that contains links for registration with MGI, FAQ pages, an authoring assistant and downloadable options for the Plug-in viewer. MGI supplies a complete manual on its distribution CD and comes in both HTML and PDF formats.

### Well done MGI!

MGI deserves to be congratulated because the documentation doesn't assume that you know what you're talking about and doesn't get wordy. It has taken a step-by-step method with plenty of screen shots that make it easier for anyone starting out in server installation.

If you're into a particular e-commerce site or plan to distribute detailed information over your local Intranet, then Zoom could be the answer. It produces relatively high quality images that you can zoom into for more information, and reproduces good quality printouts. As we start to see more online shopping and network publishing, this is the sort of technology that's going to transform the viewing options.

**Paul Warner**

## PCPlus Verdict

### MGI ZOOM SERVER

#### ✓ FOR

→ Detailed viewing of zoomed images and high quality printouts  
→ Works with several platforms

#### ✗ AGAINST

→ Bit on the slow side with a 56K connection

Specification.....	9
Quality.....	8
Performance.....	8
Value for money.....	7

**OVERALL .....8**



## NET SECURITY

# Norton Personal Firewall 2000 2.0

PRICE £40 EX VAT £32

SUPPLIER Symantec

PHONE 01628 592 222

BUY ONLINE [www.SymantecStore.com](http://www.SymantecStore.com)

**A major weapon in the fight against unwanted Internet intrusions**

In these days of increased Internet use, broadband and 'always on' connections, the risk of unwanted and malicious intrusion into your PC is greater than ever. Hackers, cookies, Java applets, ActiveX controls and Trojans can all break in to your computer and steal files, damage its contents and create havoc. It's not just anonymous threats you have to worry about – seemingly credible Web sites can use cookies to surreptitiously remove personal information like credit card details, bank account numbers and e-mail addresses.

One of the best ways of combating these problems is to buy a firewall. A firewall is semi-permeable barrier between the contents of your PC and the Internet. It functions much like a filter and, when enabled, it decides whether to allow specific communications with the Internet (both inbound and outbound)

### Requirements

Pentium class or higher, 24MB RAM, Win95 or higher, CD-ROM drive, Windows Internet support, Microsoft or Netscape 4.0 browser or higher

### Tested on

Pentium II 350, 32MB RAM, Win98, Internet Explorer 5.0

### Extra information

Registration is for one year. E-mail can be replaced with Fax, Publisher or other contact method

based on a set of rules, usually defined by the firewall itself and augmented by you after installation.

After installing Norton's Firewall (online registration at this point is recommended because it gives you access to LiveUpdates, LiveAdvisor and various customer support services), you are presented with the main screen. The menu allows you to access LiveUpdate, LiveAdvisor and Options, where you can view the various event logs and statistics and can set advanced options like selecting and deselecting firewall rules, check which sites have which rules for cookies or choose to able or disable communications ports

### Security control

The product works straight out of the box, but you can tweak and change any aspect you wish. The security control is in the form of a slider, which you can set to high, medium or low. The higher your security the less convenient it is. Thus, setting the firewall to high blocks everything until you allow it.

### Privacy control

Similarly, the privacy control has three settings. The high setting will always ask

you about cookies, Java applets and ActiveX controls before downloading them. This means you will be asked about every single cookie, applet and control coming into your system – up to 50 every time you visit a new site.

You can decide whether to accept or block all cookies, applets and controls from a site or domain, or you can decide to block or accept for a single time. Any site or domain you block appears on your blocked content list, which can be edited at any time. Thus, if you block cookies from a site and later think you may be missing something as a result, you can change the rules for that particular site.

### Set to medium

The medium setting is a good mix between convenience and protection. Your surfing movements are still hidden as with the high setting, cookies are not

blocked but you are warned if confidential information is about to leave your PC via a cookie previously

placed on your hard drive. You have to input your confidential information in a separate screen – things like credit card number, bank account details and so on.

As an example of the kind of things that can go on in the background when you're online, within minutes of configuring some simple confidential data blocks on our test PC, Personal Firewall 2000 2.0 reported three attempted accesses to confidential data. When this happens, you can look at the event log and identify which site attempted the access. There are also several security alerts concerning two Trojan programmes.

However, it's well worth remembering a firewall doesn't make you fire-proof and there's no substitute for using common sense. A firewall won't protect you against anything you actively invite on to your system, neither will it protect you from viruses, so an anti-virus package is also a must. Nevertheless, Norton's Personal Firewall 2000 2.0 gives you an extra level of security that should be most welcome without intruding too much on your regular online habits.

Jason Thomas

## PCPlus Verdict

### NORTON PERSONAL FIREWALL 2000 2.0

<input checked="" type="checkbox"/> FOR	<input checked="" type="checkbox"/> AGAINST
→ Easy	→ Tendency to lull into false sense of security
→ Peace of mind	

Specifications .....	8
Quality .....	9
Value for money .....	9
Performance .....	9
<b>OVERALL .....</b>	<b>9</b>



**S**o you have forked out for a new hard drive. Now how do you get all your data across? If you don't fancy installing the operating system, then your applications and then copying all your data on to removable media and then back onto your new hard drive, then there is an easy answer. Simply get a copy of DriveCopy and let it handle everything from setting up the disk to copying all your data across to your new hard drive. What could be simpler?

DriveCopy is from those very clever chaps at PowerQuest we'll know for hard disk utilities that do such things as making disk partitioning and hard disk imaging an absolute doddle. DriveCopy is yet another fantastically easy-to-use utility that does exactly what it claims to do with the minimum of fuss.

DriveCopy comes on a CD, but does not install on your hard disk. Instead, it quickly analyses your system and then creates two bootable floppies that will handle the copying over of files. Once you have the two floppies you can then install your new hard disk, following PowerQuest's diagrams, and taking care to set the drive correctly as master or slave, depending on how you want the drives to behave.

Once it is all in place, you must check that the BIOS is correctly configured and, again, PowerQuest provides a certain amount of help with this in the manual. Now you are ready to reboot your machine with the first of DriveCopy's floppies in the A drive.

From here on in things could not be simpler. You are asked whether you want to copy the entire drive or just a partition and then if you want to run a fast install or a safe one. We opted for a safe install, and opting further for both a check for bad sectors and verification of disk writes. Although this is more time consuming than going for a fast install it does at least give you peace of mind.

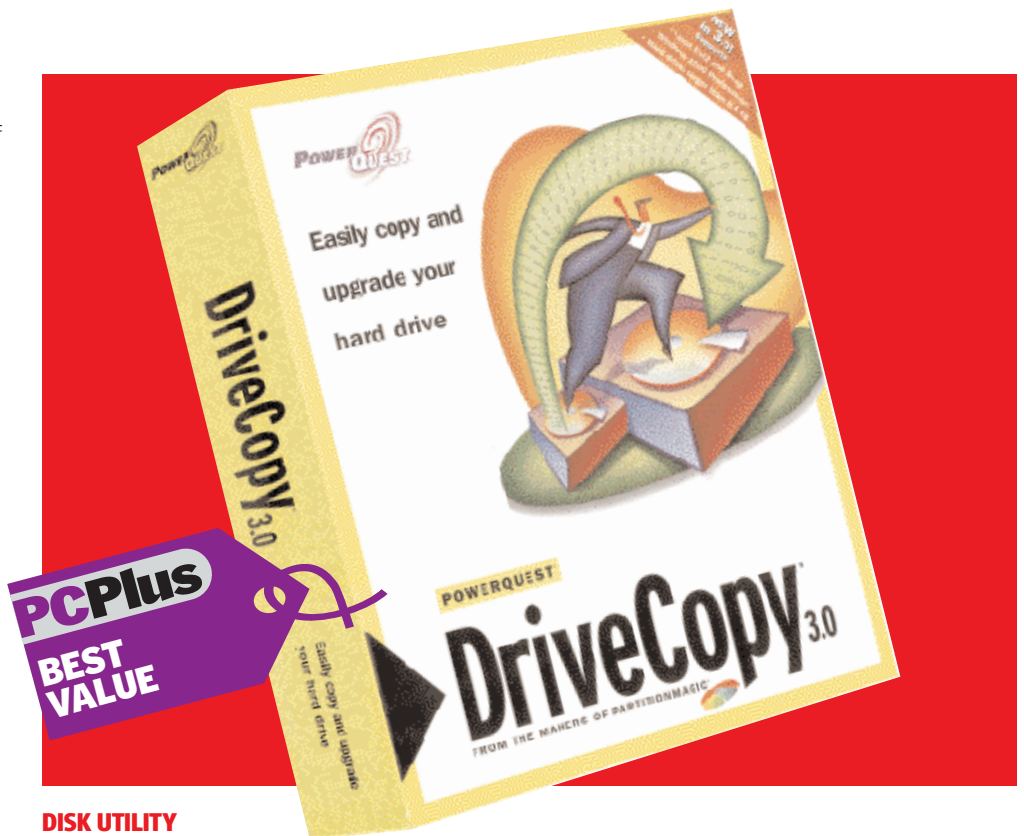
Once you have agreed this DriveCopy just gets on with the process in hand. A read-out is given showing the progress of the entire process, the progress of whatever operation DriveCopy is currently undergoing and a read-out at the bottom of just how much time everything is likely to take. This last indicator was a little unreliable.

## In use

We tested DriveCopy on a BX system with an old UltraDMA/33 drive writing to a new UltraDMA/66 drive. As you will no doubt know BX does not support UltraDMA/66 and so the transfer speed was limited to a theoretical maximum of just 33MB/second. In the end it took a little over an hour to transfer around 3GB of data from a 4GB drive to the new 30GB drive and for all the data to be verified.

When DriveCopy has finished make sure you follow the instructions in the

→ PowerQuest DriveCopy is an easy way to transfer your programs and data.



## DISK UTILITY

# PowerQuest DriveCopy 3.0

**PRICE** £29 **EX VAT** £25 **SUPPLIER** PowerQuest

**PHONE** 01189 450 200 **BUY ONLINE** [www.powerquest.com](http://www.powerquest.com)

**Transfer programs and data from your old disk with a minimum of fuss**

manual carefully, rather than just re-booting. In fact you are instructed not to reboot, but to turn your machine off, take out the source drive and change the BIOS settings back to their original state.

## Handling partitions

DriveCopy can handle partitions easily and even lets you resize and manage your partitions once the copying is over, as you might reasonably expect from the makers of PartitionMagic.

Although DriveCopy is incredibly quick and easy-to-use, it is important to refer to the manual throughout. It is not always apparent from the screen what you are supposed to do next, especially when you have finished copying what you need. Making a mistake can cost you dear, including corrupting your source drive, so you really must read the manual carefully.

The main screen is not perhaps as helpful as it might be either, with its three main buttons detracting from the Tools menu at the top of the screen, where the controls for the partitions lurk.

You wouldn't need DriveCopy if Microsoft had thought to leave DOS alone. You used to be able to perform a

.....  
**Tested on**  
 PIII450 with 128MB  
**Requirements**  
 Intel 386 SX compatible  
 or higher. 16MB RAM  
 (32MB for FAT32 or NTFS)

similar task with a single DOS command but Microsoft stopped all that and Win98 can no longer perform the trick.

However, if you need to copy the contents of one hard disk on to another then this is the utility for you. With a little care and attention it will save you a few hours and plenty of stress. And for £30 you cannot really go far wrong.

**Adele Dyer**

## PCPlus Verdict

### POWERQUEST DRIVECOPY 3.0

#### ✓ FOR

- An easy way to transfer contents of a hard disk
- Easy to use provided you read the manual.
- Relatively quick
- Saves you untold bother

#### ✗ AGAINST

- Manual makes the process sound scarier than it is
- Not always apparent on-screen what you should do next

<b>Specifications</b> .....	<b>8</b>
<b>Quality</b> .....	<b>8</b>
<b>Value for money</b> .....	<b>10</b>
<b>Performance</b> .....	<b>8</b>
<b>OVERALL</b> .....	<b>8</b>



☛ Toshiba's Portégé 3440CT is a slimline computer with good looks and an excellent display.

## LAPTOP

# Toshiba Portégé

**PRICE** £1,850 **EX VAT** £1,575 **SUPPLIER** Toshiba  
**ONLINE** [www.toshiba.co.uk/computers](http://www.toshiba.co.uk/computers) **PHONE** 01932 828 828

**Toshiba's Portégé 3440CT is a stylish ultra-slim portable computer with some of its expansion ports provided on a separate unit**

**T**oshiba's Portégé range in many ways sets a standard for ultra-portable computing. Light, robust and extremely functional, the computers combine these characteristics with a certain style that makes them perennially popular. Two new entrants have just been announced, the Portégé 3410CT, powered by a Intel's Celeron processor, and the 3440CT which goes the whole hog and has a Pentium III running at 500MHz at its heart. It is the 3440CT that we are reviewing here. A 6GB hard drive provides enough storage space for a large collection of productivity applications, and the 65MB of RAM on board, while not generous, should be enough for productive working.

### Thin and light

The Portégé 3440CT is very slim and light and relies on external CD-ROM and floppy drives to maintain its ultra-thin dimensions. The floppy drive connects to the main system unit via USB, while the CD-ROM drive occupies one of two on board PC card slots.


Other connectors on the unit itself number microphone and headphone sockets, an external monitor connector, and modem jack. The printer port is

### Specifications

Intel Pentium III 500MHz, 64MB RAM, 6GB hard drive, 11.3-inch display, 1,024 x 768 x 32-bit, PCMCIA 2 x Type II, USB x 1, 1.44Mb floppy. Bundled docking port adds PS/2, USB, audio out, LAN adaptor, parallel, serial and external monitor ports. Built-in modem.

**Operating system**  
Win98

**BATTERY LIFE**  
**1hr40**

 Full stats: see [pcplus.co.uk/review](http://pcplus.co.uk/review)

found on a docking unit which connects to a port on the right side of the Portégé. This provides a further external monitor port, serial and parallel connectors, Ethernet port, a second USB port, PS/2 socket and audio out jack.

Add together the CD-ROM, floppy drive, docking unit and mains adaptor and you have three hardware extras to carry around in addition to the main unit. This makes for a lot of bits and pieces to get into your bag, but on its own, the laptop itself is a highly portable computer.

### Benchmarking

The Pentium III processor ensures a reasonably strong benchmark performance from our Sysmark 2000 software, which made its debut in the last issue. While the overall Sysmark scores did not blow us away, they are adequate and the 3440CT should certainly provide enough power to do the kinds of jobs most of us will want to do while on the move.

Battery life, though, was rather disappointing. We got just one hour 40 from the lithium ion cell. You will do well to get a day's work out of this, even with the benefit of the strong power management software that Toshiba supplies as an adjunct to Microsoft's own – we switched this off during testing. Indeed Toshiba itself only quote three hours life for the battery. You may achieve

this in normal working conditions, but might want to consider investing in the optional high capacity battery for which Toshiba quotes a much more impressive 8.5 hours.

As far as usability is concerned, the Portégé 3440CT is impressive. Its polysilicon TFT display manages to deliver a resolution of 1,024 x 768 on the 11.3-inch screen and is bright and extremely clear. It will produce up to 1,600 x 1,200 to an external monitor which is an excellent resolution for presentations.

### In use

The keyboard is responsive – touch-typing at speed presented no problems at all. The function key row is half height in order to squeeze it into the Portégé's tiny case, but the other keys are a good size. Second function notation on the keys appears in a subtle shade of grey making the notation almost invisible. It might cause problems if you need to work in poor lighting conditions, though in our office it was fine. Toshiba's cursor control system, called Accupoint, relies on a pointing stick housed between the G, H and B keys and no less than four buttons on the wrist rest.

Two of these emulate left and right mouse buttons. Their positioning one above the other rather than side by side takes a bit of getting used to. The other two buttons come into operation when an applications scroll bars are present, one scrolling up and the other down. There is a built in modem so you have instant access to the Internet.

It is annoying that the Portégé 3440CT does not come with a CD-ROM drive as standard. You have to buy it as an optional extra and inevitably you will want to, adding to the cost of the computer from the very start. We are also less than happy with the battery life. But as an example of how portable a fully functioning computer can be the Portégé 3440CT is impressive. It is certainly worth a second glance if stylish looks and small footprint are among your key considerations.

**Sandra Vogel**

## PCPlus Verdict

### TOSHIBA PORTÉGÉ

#### ✓ FOR

- Small ultra-portable
- Excellent display
- Good sized hard drive

#### ✗ AGAINST

- Average battery life
- CD-ROM not included
- Some ports on docking unit

Specifications .....	8
Quality .....	8
Performance .....	7
Value for money .....	7
<b>OVERALL .....</b>	<b>7</b>

LINUX SERVER

# TurboLinux Server 6.0

PRICE £150 EX VAT £128 **SUPPLIER** TurboLinux  
PHONE 01752 313 190 **ONLINE** www.turbolinux.co.uk

**A good low-end Internet or departmental server**

**T**urboLinux is a long player in the Linux scene, having been in business since 1993 and selling its own distribution since 1997. It made a name for itself in the Pacific Rim market, fielding both English and Japanese language versions of its Workstation and Server distributions. The version of TurboLinux Server on test here comes in the form of four CDs, two boot floppies, and a 400-page manual.

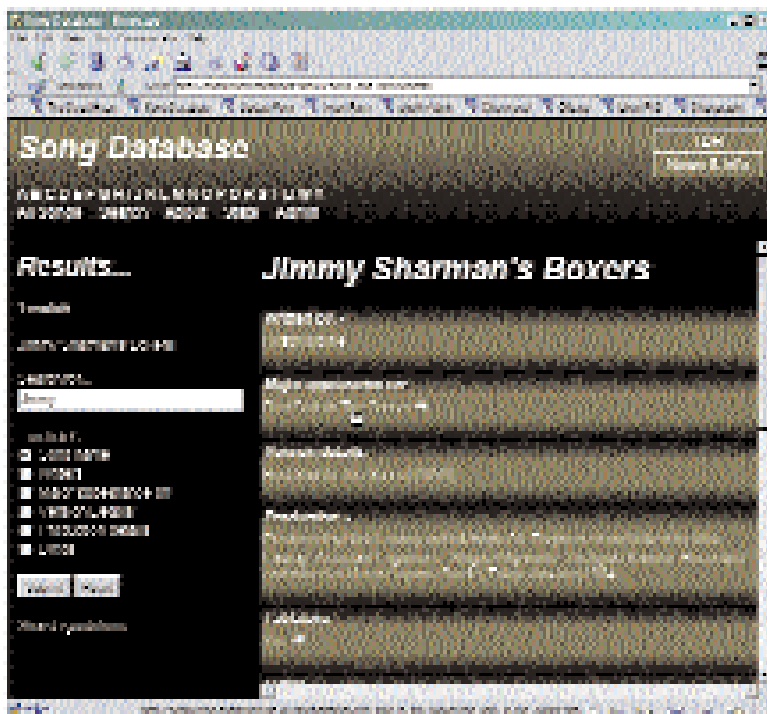
The text-based installer is easy-to-use, with only one problem occurring (related to X configuration). Several default software configurations are available, ranging from a basic firewall to an Intranet server. The facility to install a pre-defined list of packages (defined on another installation of this product) is useful, and would be a benefit to the administrator charged with installing on a large number of machines.

While Linux systems are rarely limited in their ability to perform a multitude of tasks, we felt it appropriate to specifically examine this product as a firewall, a mail server and Web server – common tasks for Linux servers. The test machine was already running a customised Red Hat installation which performed our three main tasks. We felt that it would be a reasonable challenge to simply 'drop in' the TurboLinux installation to see how effective a replacement it was for the existing system.

Security wise, the installation is well configured from the outset: There are very few services available after installation, and we quickly located SSH on an additional CD which enabled us to connect securely from a remote machine. Despite the fact that the default installation comes complete with a number of firewall rules set up, we had no problems getting connected this way.

In fact, the default firewall is of no use on our box, and it is unlikely that any clued-up users of this product will stick with it. Firewalls are best designed to suit individual circumstances and more recognition of this fact would have been appreciated. Firewall configuration is through the graphical utility gfwc, or the more traditional ipchains. Although gfwc is a useful tool, it is X-based. We would have preferred

→ The venerable Apache/PHP/MySQL was very well set up and we had our old databases online in no time.



↑ A number of services (such as Apache shown here) have configuration tools to save hacking those configuration files.

something that fitted in with the other configuration tools.

TurboLinux supplies a number of its own tools which have a consistent feel and are pleasant to use. Many aspects of server configuration are catered for but, unfortunately, no provision is made for mail. Despite the fact that the product is promoted as a mail server, it offers no advanced features to differentiate itself from most other distributions in this respect. After manually configuring the mail service, we found it to be reliable under a moderate load, however, a mail server under heavy usage would require some re-configuration (as it would with any distribution).

The Web server is good out of the box and we were able to start serving up HTML straight after installation. Configuration is possible through the Turbonetcfg program, and the Comanche GUI tool is also supplied for use under X. PHP and Perl CGI support work well and require no manual intervention. TurboLinux sees fit to include MySQL when many distributions don't and, combined with a well-configured PHP and the inclusion of MySQL modules for Perl, it wasn't long before we had our existing database-driven Web site up-and-running on the new server.

Also included with this package are e-commerce products, Apache SSL, log analysers and a search engine – enough software to get a small-scale business established on the Internet.

The remainder of the distribution offers a wide range of services for a dedicated role, or for a general-purpose Intranet server. As befitting of a server distribution, it does not include much frivolous software for use under X. It does, however, feature a full license for BRU 2000, an advanced backup utility, and a number of useful trial versions of commercial software.

Large enterprises, or those with established Linux servers, would not see many benefits in using this product, and would be better served by a heavily customised server installation. TurboLinux Server is best suited to small to medium-scale businesses moving to Linux for the first time, who simply need a stable server with a well-balanced range of applications. We were pleased that it managed to live up to the expectation of replacing the existing installation, but we couldn't see any reasons to necessitate such a switch.

**Maurice Kelly**

## PCPlus Verdict

### TURBOLINUX SERVER 6.0

✓ **FOR**

- Reliable server
- Useful manual
- Plenty of services

✗ **AGAINST**

- Lacks the punch for real high-end server work

Specification.....	9
Quality.....	8
Performance.....	8
Value for money.....	7

**OVERALL .....8**

**Requirements**  
i386 or better CPU,  
16MB RAM, 150-1200MB  
disk space  
**Tested on**  
P200MMX with  
64MB RAM  
**Extra information**  
Carriage: £7



# Close to the edit

Whether it's holiday films, wedding footage or an arty short, the quickest and easiest way to edit video is on your PC. Simon Williams digs out his director's chair and tests eight creatively conceived PCs



**Armari**  
**S8-DV500**  
**40**



**Big Red**  
**Voyager 700/DV**  
**41**



**Carrera**  
**Academy M800**  
**42**



**Elonex**  
**Webriider**  
**44**



**Evesham.com**  
**Evolution**  
**Academy DV500**  
**48**



**Polar**  
**Pinnacle 85**  
**49**



**Viglen Home Pro**  
**PIII-850LR**  
**50**

**W**hether you have an enthusiast's interest in video or want to make part of your living from it, a great way to increase your creativity is to edit it down on a PC. The facilities offered by modern digital video (DV) software go way beyond splicing sequences together, though that in itself is cheaper and more effectively done on a PC than with dedicated video equipment.

With a modern PC designed for video editing, you can take several video streams, separate soundtracks and a huge range of wipes and effects to put together a programme which will please most people, friends and clients alike.

A PC system designed for DV isn't that much different from a regular multimedia PC. There are three things which suddenly take front stage, though. The system needs a video capture card, which can take analog video from a VHS tape or video camera and true digital video from one of the modern DV camcorders and convert all streams to DV which can be stored on hard drive and run through memory to be effectively edited. See the boxout below for more on video capture technology.

The second part of the equation is the hard drive – in fact, two hard drives. Nearly all DV systems use

a pair of drives, one for Windows and your editing software and the other to provide your source video streams and to save the edited result.

The final element of a DV system is the software. There's not a lot of choice among DV editing applications – nearly everyone goes for Adobe Premiere. Premiere is designed for semi-professional and amateur use and has the power to perform most of the editing tasks you can imagine on a PC. It's also flexible enough to take plug-ins, so that hardware companies can tie it in to their particular equipment.

Here are seven, fully-fledged DV systems put through their paces, on the video side as well as in terms of performance, quality and value. They don't come cheap, but they are superb PCs.

## → Which capture card?

There are two key manufacturers of video capture cards aimed at the semi-professional market: Matrox and Pinnacle. Both companies make fully professional kit for broadcast use and have tailored their PC-based hardware by paring down their expensive (£10,000 plus) devices.

A lot of the promotional effort of both companies centres around the term real-time. Because video editing is so processor and storage-intensive, original editing software often had to render finished edits after the fact – you'd tell the software what you wanted and then wait while it worked through, frame by frame.

The latest versions of each product, the RT2000 from Matrox and the DV500 from Pinnacle, claim to do

almost all things in real-time, requiring no separate rendering while editing. This makes the products much easier to use, as you can move freely backwards and forwards through your video, frame by frame if necessary, to tailor the wipe or special effect to your needs.

Even here there are some differences, though, such as whether a wipe which appears to peel one video like a layer from another, shows running frames on the 'back' of the peel or just a still taken from it.





## What you get

Armari specialises in all kinds of graphics desktop and workstation PCs, up to several thousand pounds in price. The company's well equipped to provide a machine for DV editing and indeed, builds a lot of specialist machines like this. The S8-DV500, as the name suggests, is built around the Pinnacle DV500 capture card and break-out box. This hardware is supported by a quick 733MHz Pentium III processor, running with a generous 256MB of 133MHz memory.

This is a good spec for video editing as it provides plenty of elbow room for holding video segments during the editing process. More important, though, is the permanent storage and Armari has fitted two IBM hard drives. The first is a 14.2GMB device to hold Windows 98 and your applications and the second is a 28.6GB intended for your video files. Both run from an ATA 66 IDE controller on the Abit system board.

A single Ricoh combo drive provides support for DVD and CD playback, as well as CD-RW and CD-R recording. We'd like to see a second drive for easier copying and back-up of files from CD, but this is certainly an efficient solution.

Pinnacle doesn't supply a graphics card with its video capture board, preferring to accredit third party cards as compatible with its hardware. This leaves suppliers the flexibility to fit graphics adapters of their choice – Armari has gone for a top-of-the-range card from Guillemot. The S8 comes with a 32MB Hercules 3D Prophet II, which runs into a 19-inch Mitsubishi monitor. This combination gives an excellent display in both image quality and performance terms. Should you like to indulge, you won't find a better combination for 3D games, either.

## In use

Armari's S8-DV500 is well constructed and this is reflected in the performance it produced. On a straight application benchmark like SYSmark, the machine scored very well, earning a **PC Plus** Benchmark of 1.60, better than most systems we've seen. The 3DMark benchmark for games also showed what the system is capable of with indexes of around 5,000.

The specialist hard drive transfer tests gave good throughputs, too, with disk to disk times of around two minutes for 4GB of data and under 14 minutes to transfer it from one place to another on the same drive. The Premiere export module within



# Armari S8-DV500

**PRICE** £2,497 **EX VAT** £2,125 **SUPPLIER** Armari **PHONE** 0208 993 4111 **ONLINE** [www.armari.co.uk](http://www.armari.co.uk)

**Armari's S8-DV500 is a strong contender, with the money spent in the right places – on storage and the video system**

SYSmark gave an overall time of just over 91 seconds, which is better than many.

Armari has taken trouble to match up and check the compatibility of the hardware in its system and has added good peripherals, too, including an ergo-force keyboard from Key Tronic and a Logitech Pilot Plus mouse.

The sound system, a SoundBlaster Live! 1024 card coupled to SoundWorks Digital speakers gave good sound, with extended bass and crisp middle and treble frequencies. These speakers are excellent for playing back soundtracks, for games effects and for music reproduction.

## Service and support

Armari provides a year's on-site warranty with a call out on the next working day, so you should never be without your system for more than a week-end. Warranty calls are

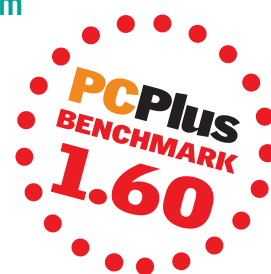
carried out by a third party. On top of this basic warranty is unlimited phone technical support.

## Conclusion

Armari has put together an excellent system, from individual components which stand it in good stead. The right choices of hardware are only half the battle, of course, but the company has combined them well into a good working system.

The key components of a DV editing system: the capture card, hard drives, storage and processor are well chosen. Pinnacle's DV500 editing system works well with Armari's chosen graphics card and, with its large, flat-face monitor and leading edge 3D accelerator, the system is ideal for video.

You won't be hampered for storage space, either in memory or on disk with the S8-DV500 and overall it represents a no-holes-barred editing machine.



## PC Plus Verdict

### ARMARI S8-DV500

#### ✓ FOR

- Good components
- Top quality video card

#### ✗ AGAINST

- May be slightly over-powered for amateur editors

Specifications.....	8
Quality.....	9
Value.....	8
Performance.....	10
<b>OVERALL .....</b>	<b>9</b>



## What you get

Big Red has put together an interesting machine in one of its big tower cases. At the top, three drive bays are filled by twin CD-style drives, a CD-RW from Waitec and a Hitachi DVD, and below these is the LiveDrive that comes with the Creative SoundBlaster Live Platinum card. This is a useful addition to a video editing machine, as it provides easy connection for all manner of sound sources, leading to more exciting soundtracks.

The machine is based on a 750MHz Athlon with 128MB of main memory, running at 100MHz. This is more than adequate to run Adobe Premiere, bundled with Pinnacle's DV500 digital capture system. Here, the card is partnered by another nVidia GeForce 2-based card, this one from Leadtek. It drives another 19-inch Mitsubishi Diamond Plus 9I flat-face monitor and the combination gives good results.

When it comes to the hard drives, though, there's a touch of bother. In previous reviews we've noted that you're unlikely to notice the difference between ATA33 hard drives and the newer ATA66 devices... except, as we've often said, if you're using them for video editing. Suddenly the transfer rate of the drives becomes very important and these two, hung on the same controller channel, gave very poor performance – detailed later. We wouldn't be surprised to see problems in normal use when editing on this machine.

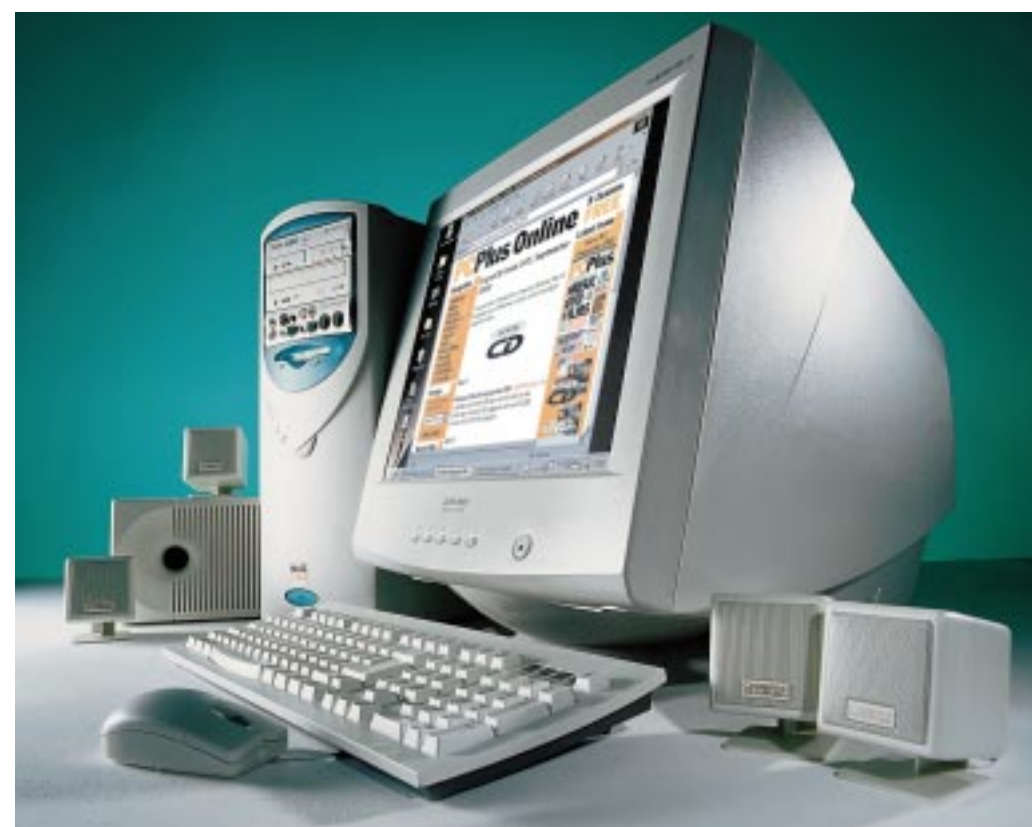
The sound system is a set of PC Works speakers from Creative and while these are good for five-point sound, the quality of the individual speakers isn't up to, for example, Altec Lansing's ACS 54s. The keyboard and mouse are fair, with a Microsoft Intellimouse and a nondescript keyboard from Taiwan.

## In use

Although we would have expected the 750MHz Athlon to have out-performed a 733MHz Pentium III, this wasn't the case in practice, with the Big Red machine managing only 1.44 from the **PC Plus** Benchmark. While this is still very respectable in real terms, we were surprised at the result, or more particularly at the strength of Armari's.

Results from the 3DMark benchmark were very good, producing an index of over 5,300 at both resolutions, though we still saw the occasional jerk as the machine ran through the games and graphics segments.

2D response from Video 2000



# Big Red Voyager 750/DV

**PRICE** £2,419 **EX VAT** £2,059 **SUPPLIER** Big Red **PHONE** 08700 711117 **ONLINE** [www.bigred.co.uk](http://www.bigred.co.uk)

**Big Red has put lots of goodies into its Voyager 750/DV, but overlooked the hard drives**

wasn't as good as from the Armari and we suspect this may come from the hard drive performance of this machine.

The twin 19GB Maxtor hard drives produced very slow transfer speeds for our 4GB test basket of files. Whether transferring from drive to drive or copying to another part of the same drive, we were seeing times of up to an hour under Windows 98. While shifting files through the copy utility isn't exactly analogous to reading and writing video streams, times like this bode badly for editing work. You're likely to see some latency (waiting for the drives to catch up) at the very least.

## Service and support

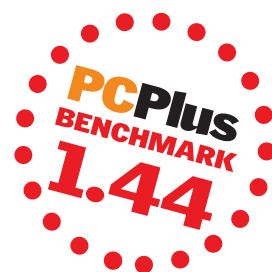
Big Red offers a good warranty deal with five years cover in total. The first year is on-site, with an eight working hour turnaround, and the company adds four further

years of cover to this. It's all back to base, though, and covers labour only, so isn't quite as good as it appears at first sight.

## Conclusion

Big Red had a lot of good ideas in putting together this machine. The LiveDrive attachment to the Creative sound card, for example, and the provision of twin CD-style drives, which covers nearly all the bases. Putting the right cables on the hard drives could have made this a real contender – an odd oversight, since the system board is capable of ATA66 and the drives themselves support the new ATA100 standard.

There's a lot to like about the Voyager 750/DV, but in the final analysis it has to be right in the key areas and one of those is permanent storage – the results we saw bring the overall score down.



## PCPlus Verdict

### BIG RED VOYAGER 750/DV

✓ FOR	✗ AGAINST
→ Strong 3D performance	→ Poor hard drive performance
	→ Nondescript keyboard and sound

Specifications .....	6
Quality .....	8
Value .....	7
Performance .....	6
<b>OVERALL .....</b>	<b>7</b>

## What you get

Carrera claims to produce over a dozen dedicated digital video systems a week, now, so should know how to produce a purposeful system. The Academy M800 certainly started out the right way, with a midi tower case offering two Panasonic drives, one CD-RW and the other DVD.

Inside, it matched this with twin Maxtor 28.6GB hard drives, both of which were running from an ATA66 hard drive controller. This gives you a lot of fixed storage, though it's hard to think how you might fill a 28GB drive with system and application files.

It might have been better to split the budget between drives of different capacities, offering most to the video D drive. Still, you could always use part of drive C for archiving finished video segments.

The processor is an 800MHz Athlon, with 128MB of memory and the Asus system board can take up to 1.5GB, more than you're ever likely to need. The third major component is defined by the choice of video editing hardware. The Matrox RT2000 is a twin-board solution, using the Millennium G400 Flex 3D edition as the graphics card, together with the company's own video capture card and break-out box.

This combination works here with a 17-inch Iiyama VisionMaster Pro monitor. This uses a fully flat-screen tube and gives a pin-sharp picture. It may be an inch or two smaller than a 19-inch unit, but it's not that noticeable.

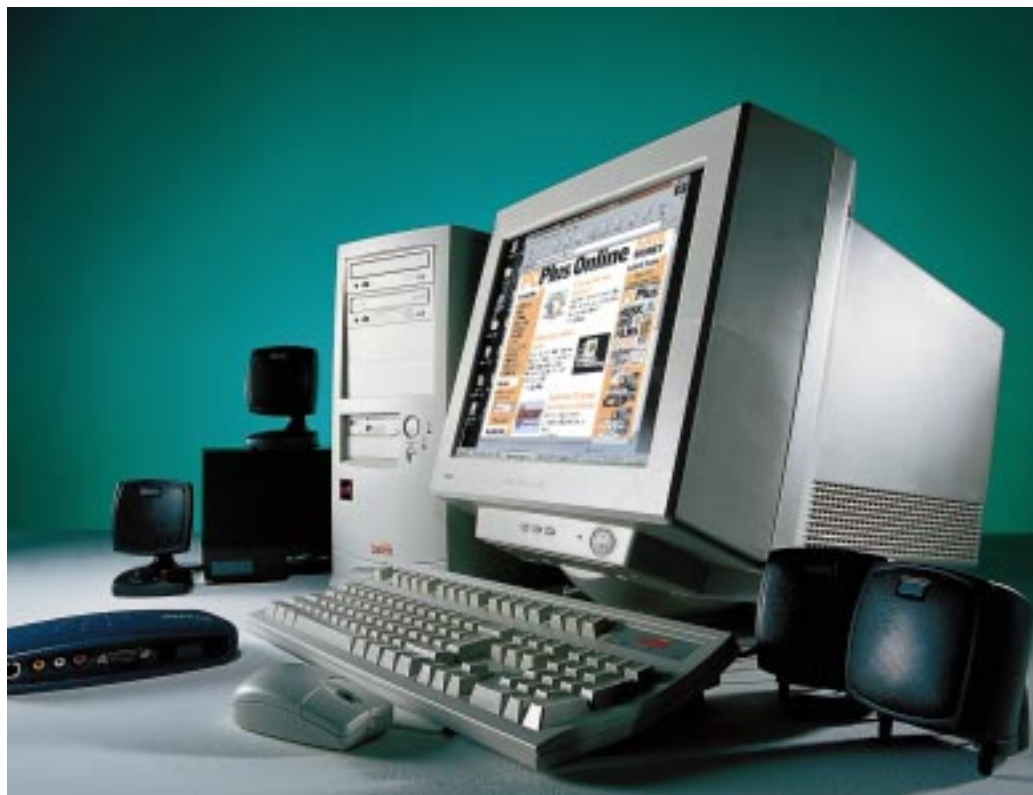
Carrera uses a SoundBlaster Live 1024 card for sound and runs it into a very reasonable set of Altec Lansing ACS54 speakers. These are more than adequate for sound tracks, games and music playback.

## In use

We expected the 800MHz Athlon to give good performance and we weren't disappointed. The SYSmark result gave a **PC Plus** Benchmark of 1.54, well up with the leaders, but oddly still not quite as quick as Armari's 733 Pentium III.

The 3DMark benchmark was held back by the Matrox G400 card. While it's still fast enough to run the majority of the games, it showed only around 60 per cent of the performance of any machine using a GeForce 2 graphics chip.

This is one of the main disadvantages of the Matrox solution. The video capture card is tied into the G400 as its corresponding graphics adapter. You can't upgrade the graphics card without changing the capture card, too. The Video 2000 benchmark



# Carrera Academy M800

**PRICE** £2,466 **EX VAT** £2,099 **SUPPLIER** Carrera **PHONE** 0208 307 2800 **ONLINE** [www.carrera.co.uk](http://www.carrera.co.uk)

**Carrera has done lots right with its Academy M800, with plenty of storage space and good performance**

was much closer to the other systems, nVidia chips or not.

Export of the Premiere graphics file was quicker than from the Pinnacle-powered cards, which is consistent with independent reviews of the two video systems, which all rate the Matrox card faster at rendering.

When it came to file copies, the Carrera machine was outstanding. It completed the most important same-drive copy test in 9 minutes 23 seconds, though the copy times from drive to drive were less impressive, when compared with Armari's

## Service and support

Carrera offers a two year, on-site warranty with a two working day call out. This is a bit longer than

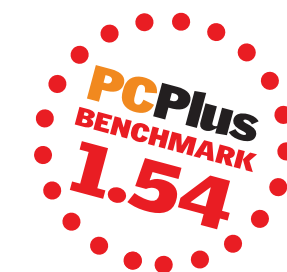
some others – twice what Big Red quotes, for example, but is balanced by lasting twice as long. As is normal with most companies, free technical phone support is also included in the package.

## Conclusion

Overall we thought this was a great system, with a huge amount of permanent storage (well over 50GB) and all the software Matrox bundles with its RT200 kit.

This includes Adobe Premiere, Cool 3D titling, ACID music and DVDit! Performance is good, particularly when reading from and writing to the video drive.

Although the monitor is smaller than you'll find bundled with most of the other systems, its display quality compensates and the



package is easy to use and quick to get useful video results from.

It's well thought out from its processor to its keyboard and mouse and should be at the top of your shortlist.

## PCPlus Verdict

### CARRERA ACADEMY M800

✓ FOR	✗ AGAINST
→ Good software	→ Small monitor
→ Strong hardware specification	
→ 800MHz Athlon	

Specifications .....	9
Quality .....	10
Value .....	9
Performance .....	8
<b>OVERALL .....</b>	<b>9</b>

## What you get

There was a misunderstanding between Elonex and ourselves over this machine. By video editing, we meant a combination of hardware and software which could be used to view and edit digital video. Elonex thought it meant being able to watch TV.

The system included a Hauppauge WinTV card, ideal for connecting to a TV aerial and using it to watch *Buffy* when the rest of the family favours *EastEnders*. It can even be used for playing back a video of *Buffy* instead of any other TV programme, but isn't, in the final analysis, a video editing system, as such.

That said, the WebRider is a fine multimedia PC, with plenty going for it. Based around a blistering 933MHz Pentium III processor and 256MB of main memory, it also features twin Fujitsu 25GB hard drives and a matched pair of Acer DVD and CD-RW drives.

All the fun of the fair, particularly when you add a Creative SoundBlaster Live! Platinum card, complete with the handy patch panel known as the LiveDrive II.

Sound from the Platinum card goes to a set of PC Works speakers, the staple fare of many a PC producer. While appearing to provide good value in number of speakers terms, the sound produced is nothing special.

Graphics provision is down to a 32MB Hercules 3D Prophet, which feeds its signal to a 19-inch monitor with Elonex's own badge. This is the weakest link in the chain, as the picture is not that sharp and the shadow mask is more noticeable than on the others. It's presentable enough, but isn't a model we'd choose for long-term viewing.

## In use

As you might have guessed from the clock rate of the processor, this machine doesn't hang about. A **PC Plus** Benchmark of 1.86 should make you sit up and take notice for a start.

The 3DMark results were pretty good, too, though the observant will notice that they are no better than from Big Red's Voyager machine, which combines a 750MHz Athlon with a GeForce 2 card. The comparison of these two should give something of a rule of thumb on the difference in performance between nVidia's new chip and the earlier GeForce 256, found here.

The Video 2000 result was also good, this time matching the



# Elonex WebRider

**PRICE** £1,996 **EX VAT** £1,699 **SUPPLIER** Elonex **PHONE** 08000 37465 **ONLINE** [www.elonex.co.uk](http://www.elonex.co.uk)

**Elonex's WebRider is a good machine with a great performance... unfortunately, it isn't suitable for video editing!**

Armari in joint first place. Data transfer between the machine's two Fujitsu drives was very acceptable, but copying to the same drive wasn't. It took just under half an hour to shift 4GB of data, which is way too long.

Subjectively, the machine was responsive and easy to use, though Elonex didn't install a copy of Premiere before supplying – without the video hardware, there wasn't a lot of point.

The keyboard isn't particularly comfortable, with Elonex's unit feeling under-sprung and quite hard on the fingertips. The mouse, another Microsoft Intellimouse, is as responsive and comfortable to use as ever.

## Service and support

Elonex provides a one year, on-site warranty with the WebRider and claims the turnout will normally be next working day.

As with virtually all PC suppliers,

you can extend this one-year cover for one or two more years at reasonable cost.

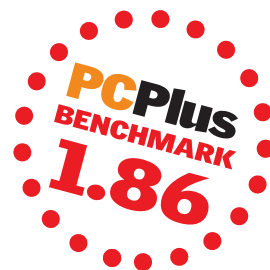
## Conclusion

Elonex has produced a very good multimedia machine, with close to leading edge performance, particularly on the SYSmark benchmark. What it hasn't produced, though, is a video editing system.

To add video editing hardware, you would need to up the price by between £500 and £700, though you could remove the cost of the TV card from the equation, as some compensation.

The WebRider is very well equipped and performs well up to specification, except in the data transfer tests.

You may want to look at this aspect of the machine if you were thinking of using it as the basis of a DV system. In all other ways, it's just waiting for an upgrade.



## PCPlus Verdict

### ELONEX WEBRIDER

<input checked="" type="checkbox"/> <b>FOR</b>	<input checked="" type="checkbox"/> <b>AGAINST</b>
→ Strong processor speed	→ Not what we specified!
	→ Poor monitor

Specifications.....	8
Quality .....	8
Value .....	7
Performance.....	9
<b>OVERALL .....</b>	<b>8</b>



## What you get

Evesham.com sells a lot of specialist systems, including those for video editing. This Evolution Academy DV500 system is based around a Pentium III midi-tower, fitted with Pinnacle's DV500 video editing kit.

Evesham fitted a Samsung Combo DVD/CD-RW drive, which is effective but not as versatile as twin drives. The hard drive choice is more interesting. Rather than going for two identical drives of medium capacity (say, 20-30GB), the company has used a smaller drive for the system – still generous at 9.5GB – and a massive 38.1GB Maxtor device for storing video.

The 800MHz Pentium III EB chip runs with 256MB of main memory from a Chaintech system board. This uses a VIA chipset to provide 133MHz memory support and an AGP 4x graphics interface.

There are four free PCI slots, as the modem is provided by a riser from the system board and sound comes from the VIA chipset. Sound provision is the weakest area of this machine, with a lightweight pair of Cambridge Soundworks SBS52 speakers providing passable sound.

Evesham has made an odd choice in its video editing system. It uses Pinnacle's DV500 video capture card, which leaves the choice of graphic card open, but then couples it to a Matrox Millennium G400.

While there's nothing inherently wrong with the Millennium G400, it's not as strong a performer as more recent 3dfx and nVidia cards.

If you're not going with the Matrox RT2000 solution, it seems a shame not to provide better 3D performance, using an alternative graphics card.

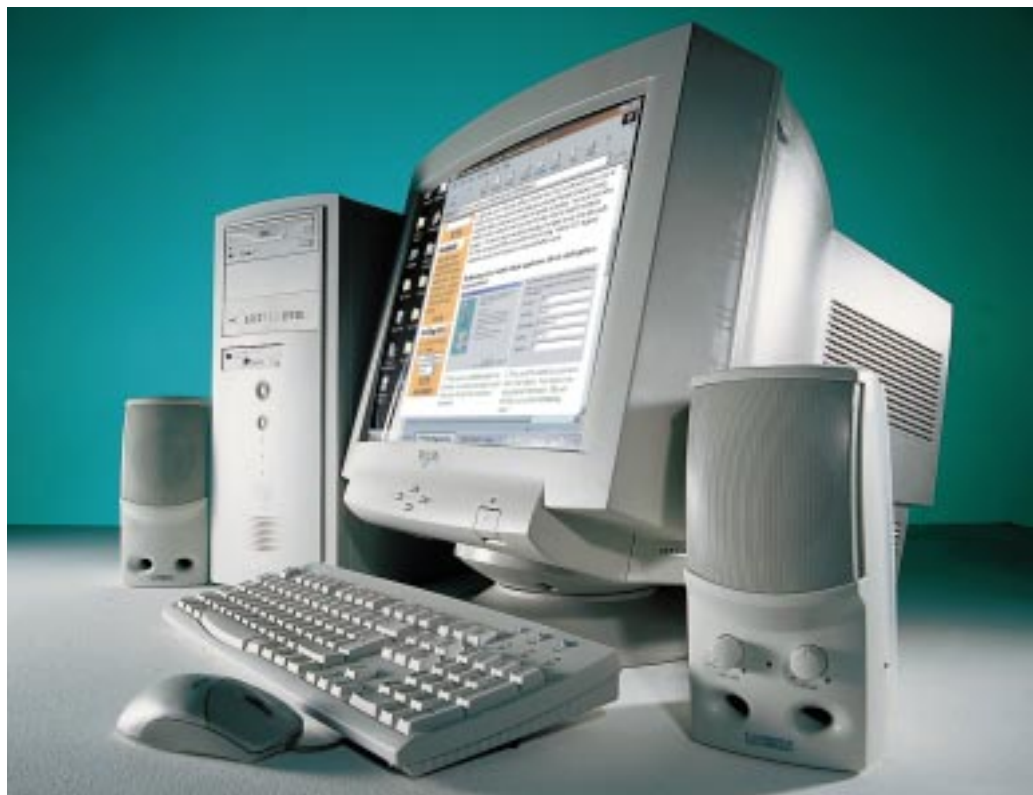
The graphics signal feeds to a 19-inch Taxan ErgoVision monitor. This gives a good picture, clean and with good contrast. Evesham's keyboard includes extra keys for suspend and wake-up, which work well, and sits in parallel with a Logitech Pilot Plus mouse.

## In use

The 800MHz processor gave the machine a good **PC Plus** Benchmark of 1.57, slightly faster than the results from Carrera's Athlon-based system. It also did slightly better than the Carrera in the 3DMark test, managing to break the 3,000 barrier in the 800 x 600 pixel run.

There were several other areas, though, where the Evolution didn't do as well.

The Video 2000 index was one of the lowest recorded in the group and the Adobe Premiere segment of the SYSmart suite was 20 per cent slower than the fastest in the group, again the Carrera.



# Evesham.com Evolution Academy DV500

**PRICE** £2,503 **EX VAT** £2,130 **SUPPLIER** Evesham.com **PHONE** 0800 0380800 **ONLINE** [www.evesham.com](http://www.evesham.com)

**Evesham's Academy DV500 offers all you would expect, except for a decent sound system**

Subjectively, the Evesham machine felt positive and responsive, with no hint of delay waiting for drives to catch up. The big, 38GB Maxtor hard drive did well with longer video clips and this is the way we like to see a video machine engineered – a smaller drive for the system and a big, contiguous storage area for video.

## Service and support

Evesham provides a two year, on-site warranty with the Evolution Academy DV500, and since the majority of call outs come in the first few weeks of use, this should stand you in good stead for a trouble-free experience.

Call out is next working day and Evesham uses its own engineers, so

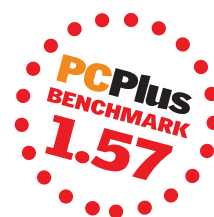
they should be familiar with the equipment they're servicing.

## Conclusion

This is a good system from Evesham, though the choice of graphics adapter is strange.

Even so, performance was good and the mix of big and small hard drives is sensible. The processor and memory allocation are generous and the combined DVD/CD-RW drive is useful.

The sound system is barely up to the rest of the hardware and looks imbalanced. There's no application software other than that bundled with the Pinnacle hardware – as with most of these systems – but if you're after video editing pure and simple, this machine can provide it.



## PCPlus Verdict

### EVESHAM.COM EVOLUTION ACADEMY DV500

✓ FOR	✗ AGAINST
→ Good processor performance	→ Weak on sound provision
→ Lots of memory	→ Slightly out-of-date graphics card

Specifications .....	9
Quality .....	9
Value .....	8
Performance .....	8
<b>OVERALL .....</b>	<b>8</b>

## What you get

Polar was the only company taking part in the review to base its system around Pinnacle's DC10 video system. This uses hardware from another provider, Miro, to produce a system which is capable of basic video playback and editing, but isn't really in the same league as either the RT2000 from Matrox, or Pinnacle's own DV500 system. Together with its Studio DC10 Plus software, it is to Premiere and the other systems' hardware what PhotoDeluxe is to Photoshop in the photo-editing world. Where Photoshop is a semi-professional to full professional product, PhotoDeluxe is more limited and is aimed directly at the home user. This is what Studio DC10 Plus and the DV10 are all about.

Supporting the DC10 are an 850MHz Athlon with 128MB of memory and twin 28GB IBM drives. While this is plenty of room in total, we'd rather have seen the split 10GB/40GB, to give more contiguous space for video storage.

There's just a single Pioneer DVD drive and a standard floppy in the way of removable storage and a 56K modem and Creative SB Live! 1024 for sound. The sound card feeds to a good, five-way set of Labtec speakers, which are marginally better, musically, than the popular PC Works set from Creative.

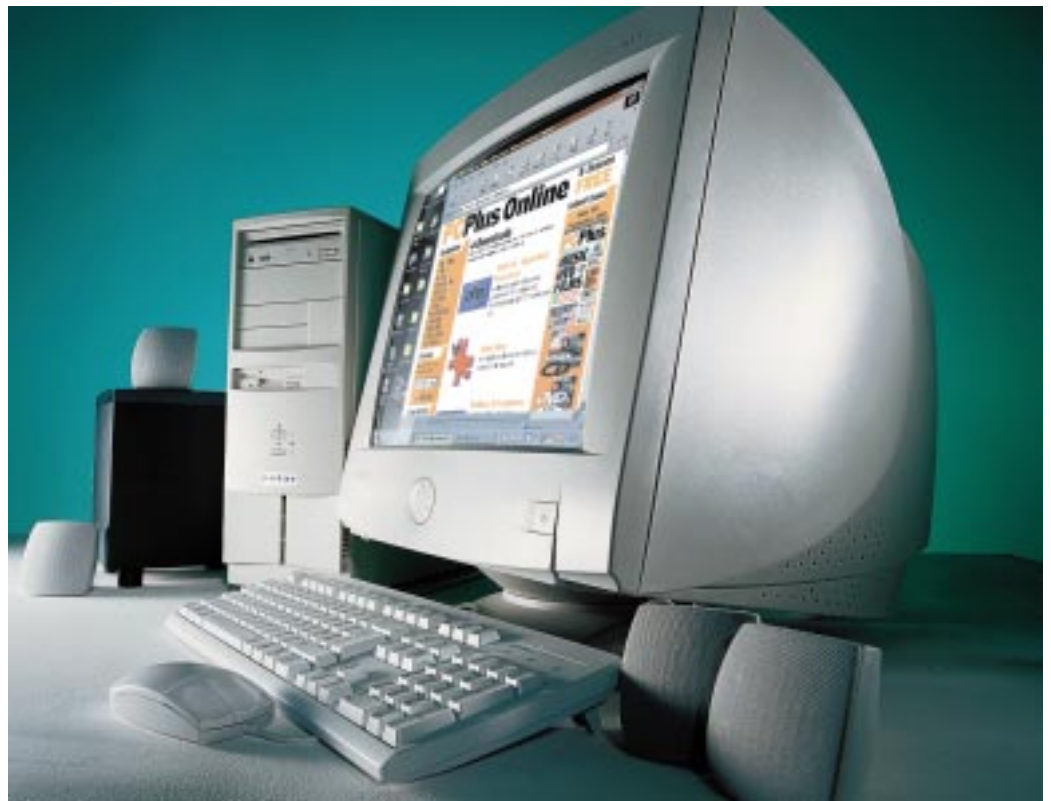
A Creative Annihilator, using an original GeForce 256 chip, rather than the latest GeForce 2, drives a 19-inch Hansol monitor, which gives a good, though not completely flat, picture. It reproduces fine detail well and colours are vibrant and well distinguished.

The control wheel on the Hansol monitor should have made it extremely easy to control, modelled as it is in the one pioneered by Taxan. However, the simply exclusion of a recess in the wheel to take your finger made it very awkward in comparison with a simple push-button regime.

## In use

The review sample suffered from several set-up problems. As received, ScanDisk reported hard drive errors and insisted on performing a surface scan of the C drive, which took around five hours on the 28GB drive. Once it was satisfied there was nothing wrong with it, it loaded Windows, but to a 640 x 480 pixel Windows screen.

It wouldn't change to a full 1,024 x 768 screen until we had re-installed nVidia drivers for the Creative GeForce II card and others for the Hansol monitor. During the tests, we noticed a persistent flicker at the edges of the screen,



# Polar Pinnacle 85

**PRICE** £1,644 **EX VAT** £1,399 **SUPPLIER** Polar **PHONE** 0800 138 1238 **ONLINE** [www.polar.co.uk](http://www.polar.co.uk)

**Polar has only really gone half way with the Pinnacle 85 – the DC10 isn't a good enough video editing kit**

suggesting some instability in either the graphics card or the monitor.

When we tried copying files from drive C to drive D, we discovered drive D wasn't formatted. All this should have been found by Polar before shipping the system.

Once under test, the Pinnacle 850 performed reasonably well, with a **PC Plus** Benchmark of 1.59 sitting in the middle of the field. 3DMark indexes varied between 4,200 and 4,400, which is better than average, thanks to the GeForce card. The 2D performance wasn't as good, though, with the Video 2000 test producing an index of just 1,743, lower than the others in the group.

The file transfer was poor, at least partly due to the fact that the two drives were on different controller channels, and the C drive was shared with the DVD.

## Service and support

Polar includes a three year back to base warranty with the Pinnacle 85,

which is a good length of cover. Unusually, it includes both parts and labour, so although it may take longer to fix than with on-site cover (available as an extra), you won't have to worry about the machine for a full three years.

## Conclusion

Polar had problems with this machine as a new system board for which it was waiting didn't arrive in time, which then left the company too little time to thoroughly test the machine it supplied. Even so, the system was in a pretty sorry state when it arrived with us for testing.

Had everything been working as intended, we still wouldn't have ranked it with the best in this group, as the DC10 video system isn't really a competitor for either of the two main protagonists here. Polar seems to have ignored the price point we set, and although it's a cheap option, it's not capable enough.



## PCPlus Verdict

### POLAR PINNACLE 85

✓ FOR	✗ AGAINST
→ Good monitor	→ Arrived untested
	→ Poor 2D performance
	→ Poor file transfer

Specifications .....	6
Quality .....	5
Value .....	6
Performance .....	7
<b>OVERALL .....</b>	<b>6</b>

## What you get

Viglen has been getting better and better at offering high value systems throughout the whole price range. This HomePro system has the core video editing functions, but doesn't forget that you may well want to use the machine for other things too. Although the company has gone for the Matrox solution, which ties it into the Millennium G400 graphics card, it has done the best it can to specify the rest of the machine up.

The HomePro is built around a Pentium III running at 850MHz and with 256MB of memory to work with. This is a very good core for any system and Viglen has matched it with twin 28GB hard drives, as Carrera did. Unfortunately, though, the system board chosen, which bears Viglen's own Vig69M designation, doesn't support ATA66 drives, so the hard drive performance suffers.

The system board also provides three ISA expansion slots, which seems an odd choice for a cutting edge application like video editing. The board uses the Intel 440BX chipset, which is one reason Viglen might be keen to use it.

The G400 graphics adapter drives a 19-inch monitor, badged by Viglen but built by Sony. This gives an excellent picture, with no visible distortion and high contrast.

Viglen uses an Internet keyboard from Microsoft, which has only a fair feel, but couples it to the excellent, ball-less Intellimouse Explorer. Software also shows the Microsoft banner, with the full Works Suite 2000 as well as the bundle that comes with the Matrox RT2000.

Sound again comes from a SoundBlaster Live! 1024 card, a fine general-purpose sound card which offers good frequency response and high signal to noise ratio. It feeds into a trio of ACS 33 speakers from Altec Lansing, which reproduce the sounds it makes well.

## In use

The 850MHz processor gives this machine a good kick into the open. It scores an excellent 1.80 on the **PC Plus** Benchmark, well ahead of the opposition. Although the 3DMark 2000 results are defined by the Matrox G400 card and are a lot lower than those from the GeForce 2-powered cards, 3D graphics isn't the primary consideration in this type of system. 2D performance, as revealed by the Video 2000 benchmark, is well up with the field, though again bettered by the



# Viglen HomePro PIII-850Lr

**PRICE** £2,466 **EX VAT** £2,099 **SUPPLIER** Viglen **PHONE** 0990 486486 **ONLINE** [www.viglen.co.uk](http://www.viglen.co.uk)

**Viglen has created a very rounded system here, well up to video editing, but capable of a lot more besides**

Pinnacle-based machines. The Premiere module in SYSmark 2000 comes in under 88 seconds, which is good.

When you look at the transfer times, though, and particularly the same-drive transfer time, you can see it's getting on for twice as slow as Carrera's machine, which uses a similar configuration, but with an ATA66 drive controller.

In use under Premiere, there was little disruption to the program that could be attributed to data transfer and everything moved snappily enough. Even so, with a lot of traffic on the system and using the three video streams the Matrox system supports, we'd be more comfortable with a faster transfer rate. As it is, drive latency could start to show itself.

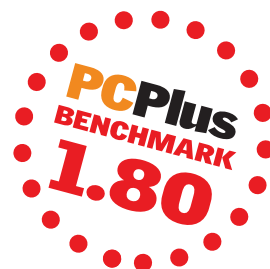
## Service and support

Viglen's one-year, on-site warranty is good and the delivery

charge, which is included in the price of the system, is even better. Viglen has a fine reputation for system reliability and after-sales service, so you can expect good support if your machine does break down, certainly in the first year.

## Conclusion

This is a high-value system with a lot going for it, not just on the video editing front. As the name suggests, you should be able to use this machine in the home for all kinds of professional tasks. The overall specification is very good, with the slight exception of the hard drive controller, which really needs to be brought up to the ATA66 standard. Even so, the excellent screen, generous processor and memory complement and extra application software all bring this system to the top of the heap.



## PCPlus Verdict

### VIGLEN HOMEPRO PIII-855LR

<input checked="" type="checkbox"/> <b>FOR</b>	<input checked="" type="checkbox"/> <b>AGAINST</b>
→ Great screen	→ Disappointing hard drive controller
→ Strong performance	
→ Good software	

Specifications .....	9
Quality .....	9
Value .....	10
Performance .....	9
<b>OVERALL .....</b>	<b>9</b>





✓ The Matrox kit contains a Millennium G400 3D Flex graphics adapter, as well as a video capture card.

## → Know your digital video hardware

There are two main sources of DV hardware – the RT 2000 from Matrox and the DV500 from Pinnacle. But which one is the best? Simon finds the choice is not a straightforward one...

**T**he two main sources of digital video (DV) hardware in the price bracket we're looking at here are the RT2000 from Matrox (£939 at dabs.com) and Pinnacle's DV500 (£535 at dabs.com). Determining which of these two is the better choice is a hard task and one which even dedicated DV magazines might find hard to make.

The boxed kits, which are available through dealers, so you can take your current PC and upgrade it to a DV machine, consist of a number of different parts.

### Video capture

Both systems offer video capture cards. These are PCI-based expansion cards which provide the necessary extra processing power to convert one form of video to another, to playback video at up to 30fps, and to handle separate video streams, so you can edit between them.

Both kits also include 'break-out' boxes, which offer all the essential sockets to connect a variety of different video sources to your PC. These may be VHS video, digital video from DV camcorders or TV signals.

To work well, the video capture card has to work together with your graphics adapter and here the two companies take different approaches. Matrox includes one

of its own Millennium G400 cards in the package, in a special version using the Flex 3D chip.

Pinnacle, on the other hand, leaves the choice of graphics card to you, and lists those which it has tested and are known to work with the DV500.

### Which software?

Video editing isn't all about hardware and both packages include software designed to support their capture cards.

Both include a full version of Adobe Premiere, the market-leader in semi-professional video editing software.

Each gears the program to its own hardware so that, for instance, it can make use of specially tailored 'transitions' – fancy cuts from one video scene to another. Transitions are similar in the way they work to slide transitions in presentation graphics programs, though a lot more sophisticated.

Both suppliers include titling software, which generates good looking display fonts for adding titles to your videos, and both include software for creating DVD-playable video which you can burn onto a CD-R or CD-RW disk (in the future, it should also cope with DVD-R and DVD-RAM).

When it comes to deciding between the two, the main criteria are image quality, rendering performance and the amount of

work that can be done in real-time (see box **Which capture card?** on page 38).

Both companies are guilty of making 'extended' claims in these areas, which the other tries to refute. Go to either company's Web site ([www.matrox.com](http://www.matrox.com) or [www.pinnaclesys.com](http://www.pinnaclesys.com)) to read the gory details.

The RT2000 and DV500 produce good quality images which, although below broadcast standard, are well up to being used for, for example, training or wedding videos.

Reviews of the two systems, and there have been several, generally give image quality to Pinnacle by a short head.

### Editing the video

To edit your video, you use Adobe Premiere, which offers a timeline onto which you can add icons representing the video segments you want to include in the finished video. Each of these can be cropped to just the action you want to see.

Transitions, effects and separate soundtracks can be added to the timeline to build up the complete video. Transitions in particular, like wipes and dissolves, and special effects like picture within picture, sometimes have to be rendered – like rendering a scene in a 3D program, before they can be viewed. This delays the editing process.

Both systems can now process much of this work as you put it together – in real time – though Matrox is generally accepted to have gone further with this feature in the RT2000.

When you save the finished video, anything which hasn't already been rendered has to be processed into the final file. Matrox normally wins this timed test, though rendering is often only a small proportion of your total editing time.

### So which is best?

Overall, we don't feel there's much to choose between the systems, though one point which may swing it for you is that the DV500 works with faster graphics cards than the G400, which is compulsory in the Matrox kit.

The Pinnacle product comes out around £400 cheaper, too, which isn't completely explained by the lack of a graphics card bundled with it.



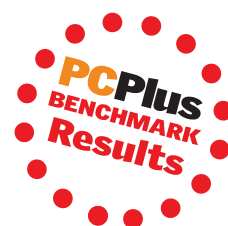
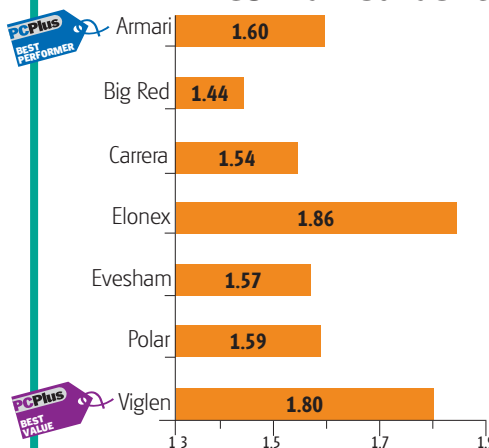
↑ You'll get the full monty with the Matrox kit.

## PC Plus benchmarks

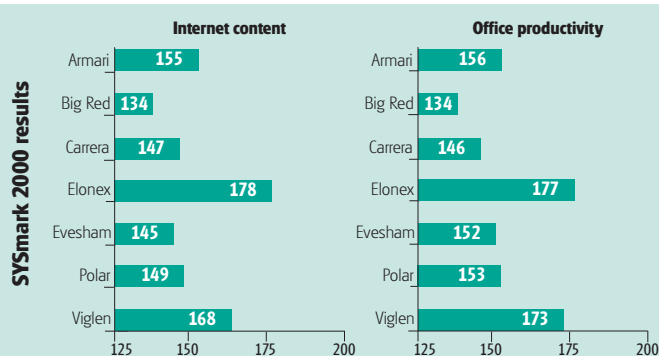
Our benchmark is designed to provide a quick and thorough guide to overall system performance. We test individual aspects of performance.

For full in-depth details on how our benchmarking system works, please visit [www.pcplus.co.uk/bench](http://www.pcplus.co.uk/bench).

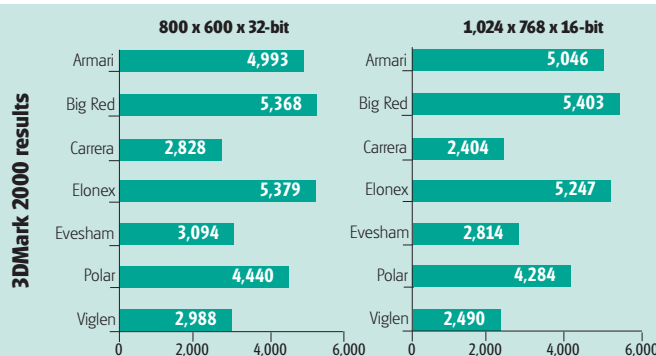
### Combined benchmark scores



The overall PC Plus benchmark score is an amalgamation of our benchmarks and is indexed against a standard 500MHz Intel Celeron system (which scores 1.0 on our scale). This means you can instantly see just how fast any PC system is.



SYSmark2000 puts each system through a number of timed scripts using Microsoft Word, Excel, PowerPoint, Adobe Photoshop, Premiere and CorelDRAW among others. The results are averaged to produce two results, one gives the power of a PC for office applications and the other for Internet content creation.



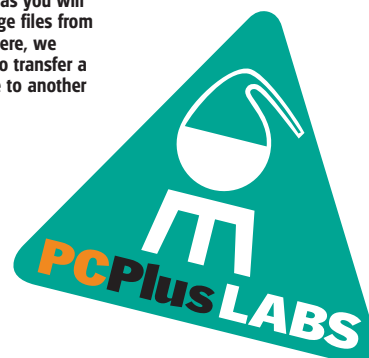
We use 3DMark running at two resolutions. This assesses the suitability of a PC for 3D games and rendering applications.

	Features	Performance	Quality	Overall
Armari	599	815	1,104	2,518
Big Red	586	697	1,034	2,317
Carrera	486	925	828	2,238
Elonex	599	837	1,104	2,539
Evesham	486	733	970	2,188
Polar	586	448	709	1,743
Viglen	486	958	828	2,271

Video2000 tests the performance of MPEG decompression – this means you get a sense of how good the system is at playing video.

	Drive C: to D:	Drive D: to C:	Drive D: to D:
Armari	2 min 21 sec	2:11	13:42
Big Red	Over 30 min	Over 30 min	Over 60 min
Carrera	4:35	4:42	9:23
Elonex	3:36	3:35	29:18
Evesham	5:26	5:09	12:03
Polar	11:30	11:08	20:27
Viglen	6:55	6:42	16:33

Data transfer rates are crucial for machines which will be intensively used for video editing, as you will be transferring very large files from one drive to another. Here, we tested the time taken to transfer a 4GB file from one drive to another within each PC.



# → Specifications compared



## CONTACTS

	<b>S8-DV500</b>	<b>Voyager 750/DV</b>	<b>Academy M800</b>
Supplier	Armari	Big Red	Carrera
Supplier type	Direct	Direct	Direct
Telephone number	0208 993 4111	08700 711117	020 8307 2800
Price	£2,497 (£2,125 ex VAT)	£2,419 (£2,059 ex VAT)	£2,466 (£2,099 ex VAT)
Warranty	1 year on-site	1 year on-site + life-time b-to-b, lab only	1 year on-site
Delivery charge	£23	£29	£23
Credit card surcharge	2%	None	None

## SPECIFICATIONS

Proc. type – Speed (MHz)	Pentium III – 733	Athlon – 750	Athlon – 800
Chipset – Bus speed (MHz)	Intel 815E – 100/133	AMD 751/VIA 686A – 100	VIA 871/686A – 133
Supplied memory (MB)	256	128	128
Maximum memory (MB)	512	768	1.5GB
Secondary cache (K)	256	512	512
Hard drive capacity (GB)	1 x 14.3, 1 x 28.6	2 x 19.0	2 x 28.6
Hard drive make	IBM	Maxtor	Maxtor
CD-ROM make – speed	Ricoh combo – 6 x 4 x 24	Waitec – CD-RW 8 x 4 x 32	Panasonic CD-RW – 8 x 4
Other drives and devices	Floppy, Diamond Supra V90 modem, Pinnacle DV500	Hitachi DVD, Floppy, V90 modem, LiveDrive II, Pinnacle DV500	Panasonic DVD, V90 modem, Matrox RT2000

## EXPANDABILITY

ISA Expansion slots – free	0	1 – 1	0
PCI Exp slots – free, AGP	6 – 3, 1	5 – 3, 1	5 – 2, 1
Serial ports	2 x 9, 2 x USB	1 x 9, 2 x USB	2 x 9, 4 x USB
Parallel	1	1	1

## GRAPHICS SYSTEM

Monitor	Mitsub Diamond 9l	Mitsub Diamond 9l	Iiyama VM Pro 410
Quoted diagonal (in)	19	19	17
Measured diagonal (in)	18.00	18.00	15.75
Dot pitch (mm)	0.25	0.25	0.25
Video adapter	Herc 3D Prophet II	Winfast GeForce2	Matrox G400 Flx 3D
Video memory (MB)	32	32	32

## SOUND

Sound card	Creative SB Live! 1024	Creative SB Live! Platinum	Creative SB Live! 1024
Speakers	Sound Works Digital	Creative PC Works	Altec Lans ACS54

## EXTRAS

Make of mouse	Logitech Pilot Plus	MS Intellimouse	MS Intellimouse
Operating system	Windows 98 SE	Windows 98 SE	Windows 98 SE
Bundled software	Premiere 5.1, Free FX, miro Instant Video, Title Deko, Video Spice Rack, Nero, ACID Music, Hollywood FX, Impression 2, DVD/modem/sound utils	Premiere 5.1, Free FX, miro Instant Video, Title Deko, Video Spice Rack, ACID Music, Hollywood FX, DVD/CD-RW/ Impression 2, modem/sound utils	Premiere 5.1, Ulead Cool 3D, ACID Music, DVD it! LE, DVD/CD-RW /modem/sound utils
BIOS make	Award	AMI	Award
Power – Suspend (W)	194 – 77	235 – 84	212 – 81
Faults as supplied	None	Hard drives badly set up	Problem with shut down

## VERDICT

**9**
**7**
**9**





WebRider	Evolution Movie DV500	Pinnacle 850	HomePro PIII-850Lr
Elonex	Evesham	Polar	Viglen
Direct	Direct	Direct	Direct
08000 374465	0800 038 0800	0800 138 1238	0990 486 486
£1,996 (£1,699 ex VAT)	£2,503 (£2,130 ex VAT)	£1,644 (£1,399 ex VAT)	£2,466 (£2,099 ex VAT)
1 year on-site	2 years on-site	3 years back to base	1 year on-site
£21	£34	£29	Included
None	None	3%	None
Pentium III – 933	Pentium III – 800	Athlon – 850	Pentium III – 850
VIA 694X/686A – 133	VIA 694X/686A – 133	AMD 751/756 – 100	Intel 440BX – 100
256	256	128	256
768	768	768	768
256	256	512	256
2 x 25.4	1 x 9.5, 1 x 38.1	2 x 28.6	2 x 27.9
Fujitsu	Samsung, Maxtor	IBM	Seagate
Acer CD-RW – 6 x 4 x 32	Samsung Combo – 4 x 4 x 24	Pioneer DVD – 10x	Sony CD-RW – 8 x 4
Acer DVD, Floppy, V90 modem, LiveDrive II, Hauppauge WinTV	Floppy, 56K modem, Pinnacle DV500	Floppy, 56K modem, Pinnacle DC10, Matrox RT2000	Pioneer DVD, Floppy, V90 modem,
1 – 1	1 – 1	2 – 2	3 – 3
5 – 3, 1	5 – 4, 1	5 – 2, 1	4 – 1, 1
2 x 9, 2 x USB	2 x 9, 2 x USB	2 x 9, 2 x USB	2 x 9, 2 x USB
1	1	1	1
Elonex V999	Taxan EV975	Hansol 900P	Envy 19TF
19	19	19	19
18.00	18.00	18.00	18.00
0.26	0.26	0.26	0.24
Herc 3D Prophet	Matrox G400	Creative 3D Annih	Matrox G400 Flx 3D
32	32	32	32
Creative SB Live! Platinum	VIA PCI Audio	Creative SB Live! 1024	Creative SB Live! 1024
Creative PC Works	Creative SBS 52	Labtec LCS2514	Altec Lans ACS33
MS Intellimouse	Logitech Pilot Plus	Digital 3 button	MS Intellimouse
Windows 98 SE	Windows 98 SE	Windows 98 SE	Windows 98 SE
WinTV, Nero 5, Cubasis, Mixman Studio, Alien v Predator, Rollcage, DVD/CD-RW/modem/sound utils	Premiere 5.1, Free FX, miro Instant Video, Title Deko, Video Spice Rack, Nero, ACID Music, Hollywood FX, Impression 2, CD-RW/DVD/modem/sound utils	Studio DC10 Plus, DVD/modem/sound utils	Premiere 5.1, Ulead Cool 3D, ACID Music, DVD it! LE, DVD/CD-RW/modem/sound utils
AMI	Award	AMI	Award
None	233 – 77	252 – 89	168 – 173
None	None	Drives and graphics not set up properly	None
8	8	6	9

# PCPlus VERDICT

You really can edit and view digital video on these systems – well, some of them. The best of the bunch enable you to put together professional looking videos, complete with the latest video effects and transitions

## Analysis

### DRIVING ON

#### How to cable up your hard drive...

If you're setting up a PC where you'll be moving large amounts of data from one place to another, you need to think carefully about how you cable up your hard drives. Most PCs have two hard drive controller channels catered for on the system board, with each channel capable of taking two drives. On a typical video editing PC, you are likely to have up to four drives to connect – two hard drives and two removable, say a DVD and a CD-RW.

#### Which channel?

So, should you put both hard drives on one channel and both removables on the other, or is it better to mix and match, with one of each type on each channel? It used to be the case that an IDE controller would run both devices at the speed of the slowest, so if you had a hard drive and a CD drive on the same channel, the hard drive would slow to the speed of the CD. With UDMA, this is no longer the case, so there's no real restriction in putting one of each type of drive on each controller channel.

If you follow normal video editing practice and store all your video segments on one drive, usually the D: drive, then in most cases it's unimportant which way round you configure the drives.

However, there are likely to be times where you're copying data from one drive to another and in this case, it's better to have your two hard drives on separate channels – you can read from one and write to the other at the same time. That would be my preferred configuration. By the way, if you use SCSI instead of IDE, the controller can read and write down the bus simultaneously.



↑ Moving large amounts of data requires careful positioning of your cables.

## BEST ON TEST

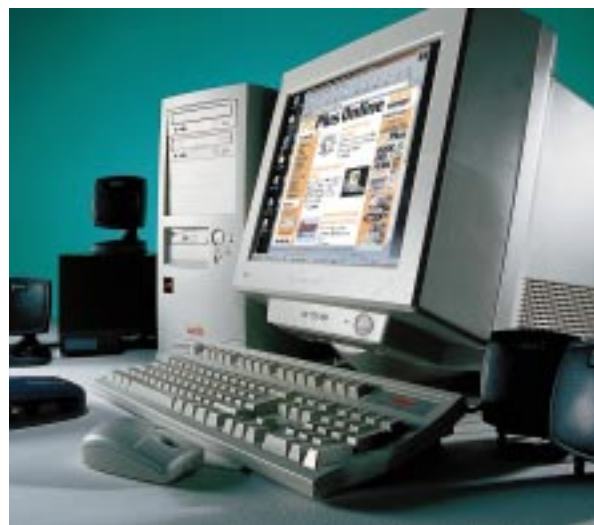
### → CARRERA ACADEMY M800

PRICE £2,466 EX VAT £2,099

SUPPLIER Carrera PHONE 020 8307 2800 ONLINE [www.carrera.co.uk](http://www.carrera.co.uk)

This machine comes from one of the leading suppliers of video editing systems and when you examine it you can see why. The system is right in all the important places. You need big hard drives, well set up to achieve the data transfer rates for video and Carrera has put in two 28GB devices and set them up to give the fastest data transfer rate on the D: drive in the group.

You need a fast processor and the 800MHz Athlon pushes overall tests results up to very respectable levels. You need a good monitor and although Carrera's is a 17-inch rather than the more normal 19-inch, it does have a very high quality display.



Most importantly, it provides an excellent video capture card, break-out box and software support, in the form of the Matrox RT2000 system. As a purpose designed video editing system, it's hard to beat.

**PCPlus Verdict .....9/10**

## PCPlus BEST VALUE



## BEST VALUE

### → VIGLEN HOME PRO PIII-850LR

PRICE £2,466 EX VAT £2,099 SUPPLIER Viglen  
PHONE 0990 486486 ONLINE [www.viglen.co.uk](http://www.viglen.co.uk)

Viglen managed to squeeze several worthwhile extras into its machine, which was also one of the fastest in the group.

As well as the same Matrox RT2000 kit as in the Carrera, Viglen incorporated a 19-inch monitor, 256MB of memory, an 850MHz processor, Works Suite 2000 and even one of Microsoft's Explorer mice. It was a toss up between the Carrera and this machine for the best in the Labtest, with the Viglen just losing out on its performance in Premiere and data transfer.

**PCPlus Verdict .....9/10**

## PCPlus BEST PERFORMER



## BEST PERFORMER

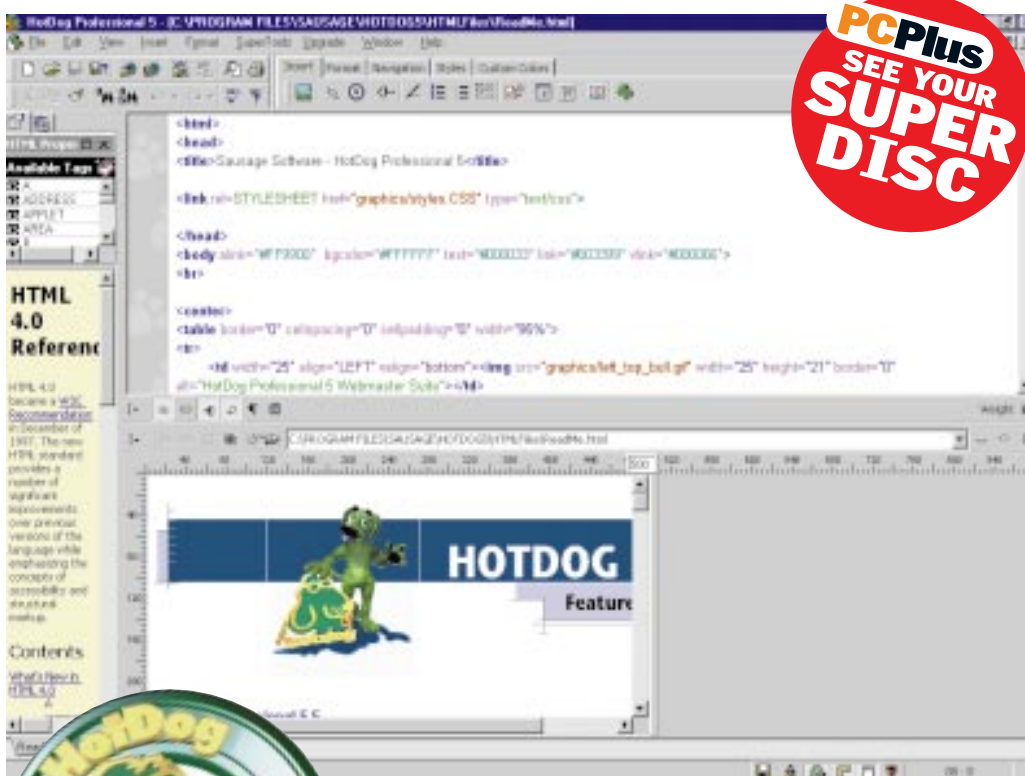
### → ARMARI S8-DV500

PRICE £2,497 EX VAT £2,125 SUPPLIER Armari  
PHONE 0870 333 6329 ONLINE [www.armari.com](http://www.armari.com)

Armari has done wonders with a 733MHz Pentium III processor. By using the Pinnacle DV500 video editing kit, it leaves the choice of graphics card open and the 3D Prophet II holds the machine's end up well in 3D and application benchmarks alike.

Although the data transfer results between folders on the D: drive aren't the best in the group, they're still comparatively quick and the inter-drive results are scintillating. 2D performance results were also the strongest in the group.

**PCPlus Verdict .....9/10**



Full product worth £80

# HotDog Professional 5.5

The perfect authoring tool for both professional and budding Webmasters

**H**otDog Professional 5.5 is a complete Web development tool. Despite being fully-featured, a comprehensive help facility is included for those less experienced, making the most complex tasks straightforward. Sausage Software, the makers of HotDog Pro, claims that it has more features than any other Web development tool.

There is a particularly useful section on uploading and managing your site — an area often overlooked by publishers. This version has had the shell revamped and it now loads twice as fast as HotDog 4 and opens documents three times faster.

HotDog 5.5 supports proportional fonts and full colour customisation. There is also comprehensive

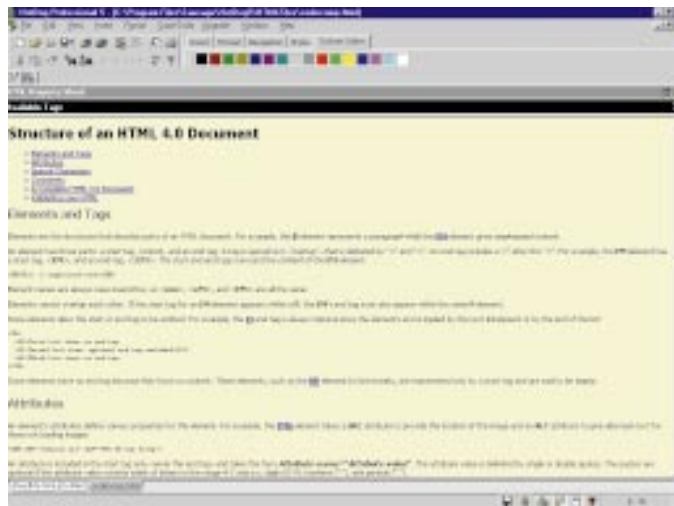
support for multi-lingual character sets. Your work can be saved in Windows, Mac, UNIX and Linux files formats.

In the ROVER function you can view and edit Web pages and watch changes appear. Browsing the Web in the on-the-fly preview window enables you to download any remote page being viewed and open the source in a New Editor document.

## Do less work!

HotDog's Code Completion follows the same principles as RAD coding tools like Delphi and Visual Basic, except in a passive mode (that is, you have to invoke it). At any point in your code you can simply hit CTRL + SPACE and you will be given valid suggestions for Tags, Attributes or Values. Once the Code

↓ If you're new to HTML or an old hand who needs a gentle nudge, the program comes with a whole host of texts about HTML and the Internet.



← The program is laid out in a useful selection of windows, from the main code window to the up-to-date help facility on the left-hand side.

Completion list is invoked, it will stay active (that is, it will follow keyboard movements, normally SPACE for next suggestion or LEFT/RIGHT arrows to move through existing code) and update on-the-fly.

When the Code Completion list is invoked you use UP and DOWN arrows, PAGE UP and DOWN and HOME and END keys to navigate. Use ENTER to insert the current option into the document. Almost all Suggestion Types have multiple insertion options. By hitting CTRL + SPACE a second time the options will cycle through, with the last one that was used kept as your preference.

Not all options are available at this time — notably the ability to have your custom colours available — but these will come. Most Suggestion Types will keep a History list of the last selected options at the top of the list so you can more easily access your most used options.

HTML can sometimes be confusing so HotDog has included a logical icon for each Attribute, which means you can soon learn what types of Values they expect. And when you have to insert a Value, HotDog Code Completion displays exactly what you are supposed to put there, in a format you can understand. A Property Sheet includes HTML Tag help, enabling you to keep track of your cursor position while cycling through your Code Completion options. Soon you'll be speeding through your code without ever having to touch your toolbars again.

HotDog merges powerful, professional Web site design features with a helpful guide for beginners and experts alike. HTML has never been easier.

**Paul Ravening**





# Upgrade to HotDog Professional 6.0 for just £15.50

Save  
**£23**

Take advantage of this special  
**PC Plus** reader upgrade



**H**otDog Professional is one of the world's best loved Web authoring tools. And now you can buy the latest version of this highly rated application for just £15.50. That's £23.15 off the normal price, making it the best priced HTML editor in its class.

Master of innovation, Sausage Software has packed the latest version with many enhanced functions and brand new features to make any Webmaster drool with anticipation. We've included a fully working 30-day free evaluation version on the **SuperDisc** so take it for a test drive first...

## New and improved features include:

- Improved resource usage
- Extended editor support
- Integrated cascading style sheets
- Leading edge accessibility support
- Faster document processing
- Easier document navigation
- Flexible scripting author

## So, how can you make HotDog Professional 6.0 yours? Simple!

Just visit Sausage Software's secure online ordering site at <https://secure.sausage.com/secretstore/netmagupgrade.html>. For further details on the product visit [www.sausage.com/hotdog6](http://www.sausage.com/hotdog6)

## And that's not all!

Sausage Software has also produced two other outstanding Web authoring applications designed to suit all ages and levels of ability. Trial versions are included on the **SuperDisc** and can be bought on the Sausage Software Web site at [www.sausage.com](http://www.sausage.com)



[www.sausage.com](http://www.sausage.com)

## HotDog PageWiz £27

Designed for the novice user, HotDog PageWiz is an intuitive Web authoring tool designed to meet the needs of up-and-coming Webmasters, whatever the level of experience. HotDog PageWiz comes with ten snazzy templates to get you started, and combines the best of WYSIWYG and text-based authoring to provide a totally scalable tool for you to not only learn, but master Web design.

## HotDog Junior £15.50

HotDog Junior is a simple Web page creation tool designed primarily for children aged six years and up. Junior (the friendly HotDog character) will guide kids through a simple four step process whilst educating them about Web page creation, and ensuring they have fun along the way.



Order online now at [secure.sausage.com/secretstore/netmagupgrade.html](https://secure.sausage.com/secretstore/netmagupgrade.html)



Lite product worth £30

# Norton System Commander

Want multiple operating systems, but the thought of multi-booting scares you? Norton System Commander Lite wants to sort it out for you



**S**ystem Commander Lite is a utility that lets you install multiple operating systems on a single PC. The software installs in a few minutes and, during installation, the program replaces your hard disk's Master Boot Record (MBR) with its own. It takes a backup of the original MBR so that it can be uninstalled easily.

On rebooting your system, the replacement MBR loads and runs

the bulk of System Commander's program code. The first time this occurs, System Commander searches your PC for operating systems and presents you with a list from which to boot. At this point, it removes itself from memory and leaves the operating system unaware of its existence.

The simplest way to install a new operating system is to put it into one FAT partition. In this case, once the new operating system is

installed, System Commander Lite detects any new files in the root directory, makes a copy of them and works out which operating system installed them.

The next time your PC is started, the new operating system is listed in the startup operating system menu. Depending on what you select, the appropriate files are copied into the root directory to enable the operating system to load.

System Commander is not only useful if you have different operating systems. For instance, you could have two versions of Windows 95, one set up for office work and the other for leisure; or you could have a different operating system for each person at home. How you use System Commander is down to you, but be sure to look at our guide to installing the software.

**Paul Ravening**



## Save £10 on Norton System Commander 2000!

### Upgrade to System Commander 2000...

System Commander 2000's new look OS wizard is a snap to use. Simply choose the OS you plan to install and the OS wizard will set up your system automatically. BackStep wizard tracks all the actions taken while installing a new OS and enables you to remove it easily, or just perform certain actions from the list. System Commander 2000 includes full NTFS and Linux

partition resizing so creating and resizing partitions is a breeze.

Also included in System Commander 2000 is the NTFS to FAT32 convertor. The NTFS convertor safely handles all NTFS versions, even compressed ones.

Take your voucher to your local PC World store and you will be able to buy System Commander 2000 for £39.99.

Not redeemable against any other products  
Cannot be used in conjunction with any other offer  
Photocopies not accepted  
Offer ends 31st September  
Process this as a £10 discount on System Commander using code 13 (Promotional Offer)  
Deface voucher and file in your daily envelope

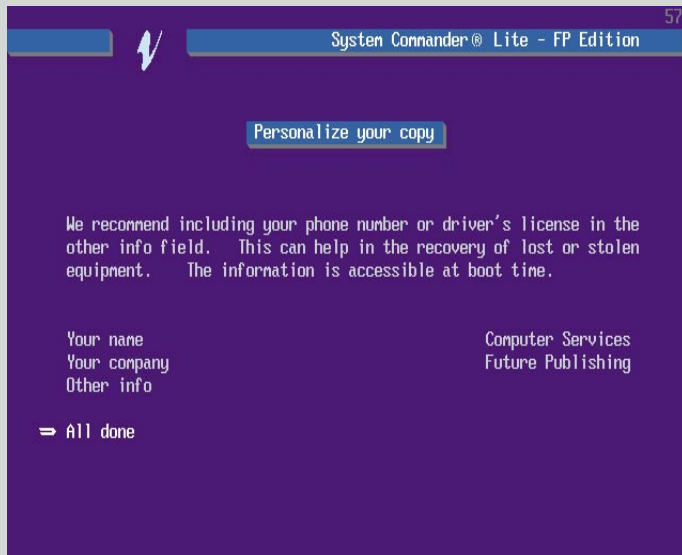
## → Will your operating system support Norton System Commander?

Want to know if your Operating System will be compatible? Check out our handy list...

MS-DOS v3x	NT v3.1
MS-DOS v3x	NT v3.5
MS-DOS v5	NT v4.x
MS-DOS v6	OS/2 v 1.x
MS-DOS S/V v5x	OS/2 v2 2.x
MS-DOS S/V v6x	OS/2 v3
PC-DOS v 3.x	Coherent UNIX
PC-DOS v 4.x	CTOS
PC-DOS v 5.x	Interactive Linux
PC-DOS v 6.x	Linux
PC-DOS v 7.x	LynxOS
PC-DOS S/V v 5.0	Minux
PC-DOS S/V v 6.0	NetBSD
DR DOS v5.0	NeXT Step
DR DOS v6.0	Pick
Novell-DOS v7.0	QNK
Netware v2.x	SCO UNIX
Netware v3.x	Solaris
Netware v4.x	THEOS
Windows v3.x	UnixWare
Windows v9x	XENIX

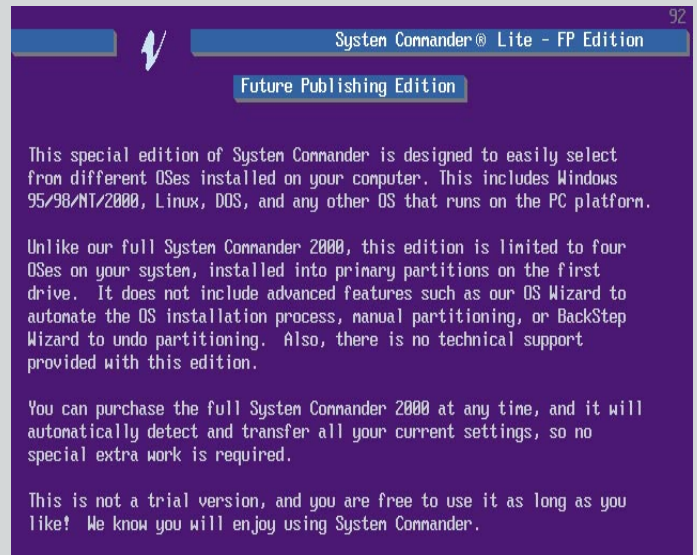
## → How to install System Commander Lite

So you want four operating systems at your disposal. Here's how to install System Commander to make it a painless task



Use ↑↓ keys to select item. Press Enter to continue.

**1** System Commander Lite will install from the SuperDisc, so you don't have to exit to DOS. The first screen you see is an installation menu. This is just to let you know exactly what will happen during the program's installation.



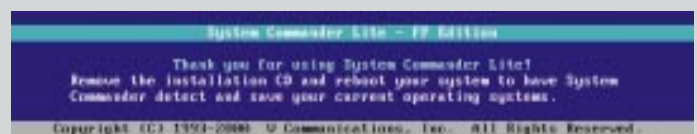
Press any key to continue.

**2** A license agreement will then be displayed on screen. You should, as always, take a moment or two to look through it before choosing yes or no. If you agree to the license terms and are ready to move on, press Enter to continue.



Make selection using ↑ or ↓ and press Enter.

**3** You are then asked to personalise your copy with your name, company details and something personal such as your driver's license number. If your PC is stolen, it could help get your machine returned to you.



**4** The next screen tells you the difference between this edition of System Commander Lite and System Commander 2000. If System Commander 2000 appeals to you, take a look at our great upgrade offer.



Press any key to continue.

**5** You will then be asked if you wish to create a boot disk. If you haven't created one already, make sure you've got a blank one to hand. If the disk isn't blank, System Commander provides you with a list of options.



Make selection using ↑ or ↓ and press Enter.

**6** After getting the computer's configuration data, you are presented with a screen that lets you know that the installation is almost complete. The whole procedure should only take about five minutes and is thoroughly painless.



Full product worth £20

# 30,000 pieces of clip-art



You'll never be stuck for a quality picture, or amusing cartoon again with this gargantuan collection

**N**ever let it be said that we don't go to extremes here on **PC Plus**, and this issue is no exception with this amazing collection of 30,000 pieces of quality clip-art, photos and fonts. If you manage to look at every one, we'll be impressed. Just follow our walkthrough to find out more...

**Paul Ravening**



## → Getting started with the GreenStreet Browser

This number of pictures could be a nightmare to navigate through. Luckily with the GreenStreet Browser, it's easy to find what you want...



**1** The GreenStreet Browser is where you view the clip-art. You'll be pleased to hear that it doesn't install it all to your hard drive – you view it on the disk and then import your selected file to your PC's hard drive. We show you how in the next few steps...



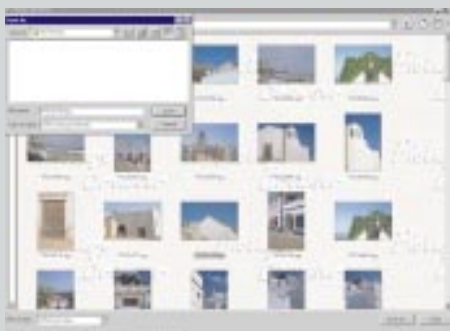
**2** Down the left-hand side of the browser, you'll see an Explorer-style window. Here's where the folders with the clip-art are located. The browser defaults to the start of the collection on start up, and you can return here with a swift press of the Home button, located on the top right-hand toolbar.



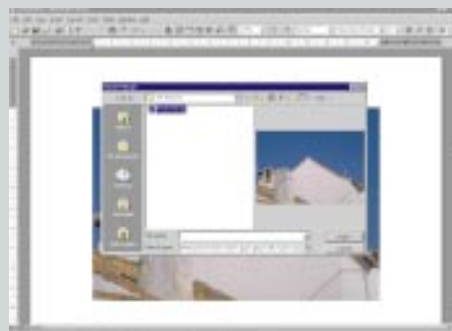
**3** If you'd prefer to have an idea of the kind of pictures you'll be seeing, use the main browser window. Here you'll see the folders, with accompanying pictures. Double-click on each one to work your way through the megabytes of artwork.



**4** If it's all getting too much for you, you can always limit your options. If you know the kind of file type you want – say a GIF file – then use the Files of Type drop-down box in the bottom left-hand side of the screen. You can select only GIF files to make your search easier.



**5** You've found the image you want and you're ready to put it into your document or drawing. The easiest way is to make sure you can see some of your desktop, then click and drag the picture itself onto the desktop. Failing that, you can click on the Save As button.



**6** Finally, put it into your document. There are different ways of doing this, depending on what you are using the image for. Needless to say, this clip-art collection will liven up any letter, presentation or Web page.

## → Glossary of terms

If you're going into the virtual world, you'll need to know the lingo

**Avatar:** The technical name of your online persona.

**Acolyte:** An Avatar who serves the community of Dreamscape. Ask Acolytes for inworld help. They are your guides in the Dreamscape.

**Caretaker:** An Avatar who serves the community of VZconnections and other upcoming VZones. They assist the World Managers to build the virtual zones, implement events and help oversee the development of each VZone.

**Dreamscape:** The name of the oldest VZone environment.

**Guides:** Volunteer Avatars who serve the community of VZconnections and other VZones. You can page Guides for inworld help.

**Token:** The inworld currency. You earn tokens with time spent in a VZone. Currently it's 100 tokens per hour (up to five hours per session) for time spent as an Avatar. They are paid out every hour of online time completed. Check your nearest ATM for your account balance.

**Inworld:** This refers to being inside an Avaterra virtual zone or world.

**World Managers:** These manage all aspects of inworld needs.

**SysOp:** A SysOp oversees the community's message boards. SysOps have no jurisdiction inworld but can help you with technical problems you may encounter while inworld.

**Waking World:** In reference to Real Life and being out of the context of a world or zone.

**VZT:** This is the same as the Pacific Time Zone. Many events in the zones are announced in VZT.



## Full product

# Avaterra

Get virtual with Avaterra, and its amazing online worlds



One of the greatest uses for the Internet nowadays is chat. We've got endless chatrooms, instant messaging services and so on. However, chatrooms need a bit more life, and Avaterra supplies that tenfold.

Avaterra's VZones technology enables members from around the world to create their own online personas, called Avatars, and become part of a thriving online virtual community. You can communicate with other Avatars in an extensive and colourful world after downloading and installing the VZones software.

### Personalise your Avatar

As a member, you are able to personalise your Avatars by choosing from various body styles, hundreds of heads, clothes (upper and lower body sprays) and an endless variety of accessories. Avatars are visual, colourful and animated, delivering a whole new dimension to the online experience. Each Avatar has four different facial expressions, five gestures and three styles of movement.

However you present yourself, and what part you play in the community is up to you!

Each VZone has streets,

buildings, parks and private spaces. The citizens of these virtual communities, each represented by individual Avatars, spend time in the virtual spaces and connect with others, socialise, shop, entertain friends and take part in social activities that include games, sharing Web pages, language lessons, treasure hunts, holiday activities and virtual weddings.

VZones allow for a thriving internal economy in which members can buy and sell virtual objects with the tokens they earn. You can even make virtual money, just by signing on – each Avatar accumulates tokens for each hour spent per session. Currently it's 100 tokens an hour and you can spend up to five hours per session.

### Dreamscape

In Dreamscape, one of the many VZone's you can choose from, you'll find that the real world and the dream world merge. Here you'll meet fellow Dreamers, considered to be some of the most friendly people in any virtual world. You can choose from a wide range of daily activities, from simply meeting people and building friendships, to attending parties and events, playing games, creating art and

shopping for objects.

Dreamscape has vast parks and jungles, city streets and a multi-level shopping mall complete with virtual items.

### Meet new friends

Most people find Avaterra is an easy, non-threatening way to meet new people. Newcomers are welcomed into conversations within minutes of entering the world, making it more inviting than text chat on the Internet or online services. This is partly because, unlike other virtual worlds, the VZones have such a strong sense of community.

### Logging in

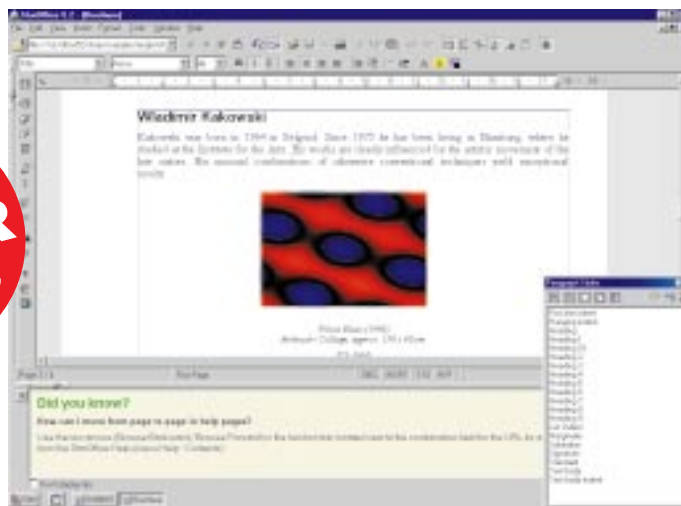
Each time you log onto a VZone, you enter in exactly the same place you logged off. The persistence of all elements creates a sense of continuity for the user from visit to visit. In VZones, as in real life, persistence and continuity help bond people together.

Have fun with Avaterra – but try not to spend too long in there. Remember, the real world always awaits you!

**Paul Ravening**



**STAROFFICE**



**Exclusive full program**

# StarOffice for Windows/Linux

**Paul Ravening** shows you how StarOffice 5.2, with its fast integrated office applications, can help you speed through your work

**R**egular readers of **PC Plus** may remember that we've run StarOffice 5.0 and 5.1 in the past. We've always been big fans of this innovative office suite, and we remain impressed by the polish of the tightly integrated utilities in this latest version. But, for those of you who are new to the magazine, we'll explain a bit about the product.

StarOffice 5.2 is a fully-featured, multi-platform productivity suite that provides a complete set of easy-to-use, powerful tools for accomplishing your day-to-day personal or business tasks, providing more functionality than Microsoft Office Standard Edition.

StarOffice 5.2 software comes with a standard set of both key and complementary components.

## The key features

Look out for the following features:

**Word processing**  
**Spreadsheet**

**Presentation graphics**  
**Database tools**  
**Drawing and diagramming**  
**Charting**

We live in a wired world and today's applications have to work within it. The built-in Web functionality of StarOffice software means you can browse and locate information on the Web, then simply drag and drop it into your documents, without leaving the StarOffice environment. All the key components support one-click HTML creation and a full editing environment.

The e-mail client supports all major Internet standards. You can stay current with newsgroups and enjoy e-mail exchange from a unified desktop. And you can save your diagrams and drawings to popular Web file types like GIF and JPEG.

StarOffice software is all about choice. With the Solaris Operating Environment, Microsoft Windows and Linux versions, StarOffice

software is already available on more platforms than any other office suite. You should select an operating system based on the work you need to do.

StarOffice software file formats are the same across all platforms. That means a single file moves seamlessly from platform to platform so no translation is necessary. This is a godsend to multiple operating systems everywhere — especially new Linux users who might create a document in StarOffice Linux, but then want to revert back to Windows to complete some complex pieces of the project.

## How to install StarOffice 5.2

Installing StarOffice has been made even easier. Once you've started the installation and answered the obligatory license agreement questions, you'll be presented with an option to include old StarOffice files in the new installation. If you are using a

previous version of the program, this is where you can copy across your personal settings, dictionaries and documents. Simply point the installer at the location of your old version of StarOffice and it will do the rest.

Choose your size of installation and click next. You'll now be asked for a Java runtime environment which the program can use. If it finds one on your system, simply highlight it and continue the installation. If it doesn't, it will give you the chance to install one. Once the program has been installed and

← **StarOffice's Word Processor competes with the best on the market for power, functionality and ease of use.**

run for the first time, it will import your Internet settings from your current browser if you have one installed.

Once you are up-and-running, the desktop is extremely flexible. Although the explorer window is the centre of it all, it spends most of its time tucked away at the side of the screen. Use it to launch programs, just like you would in Windows Explorer.

## Working together

The power in StarOffice comes not just from the individual applications but how they work together. For example, your address book is available for your e-mail and also to merge into text documents; it can be saved as a Web page or imbedded in a spreadsheet to generate charts for a presentation. **PCP**

## → Installing StarOffice on Linux Systems

**There are a few points you should be aware of...**

Installing the program under Linux has been made simple. There are only a few things you should remember: If you install the program when logged in as a user, you will only be able to use the program when signed in as this user. Installing it as the root user will enable you to see the program from any account.

The installation is also quite slow — it might seem to stop at times but don't fret. Give it a few minutes and it will complete the task. When the program has finished installing it will put a shortcut on your KDE bar under Gnome/X APPs. You can then run it from there.

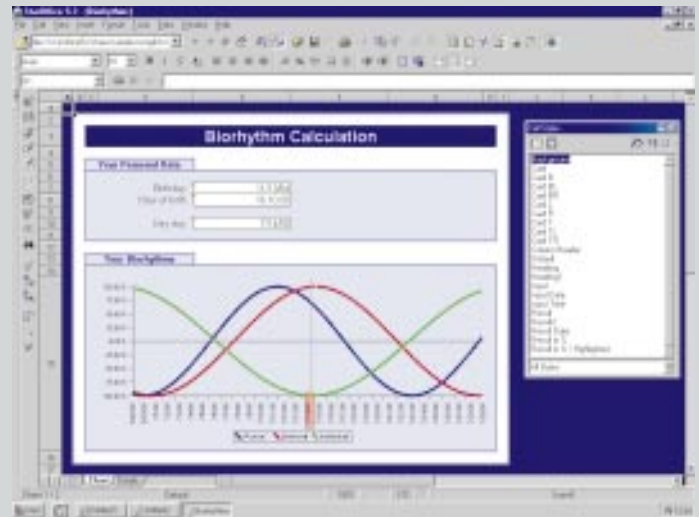


## → What's in StarOffice 5.2

So you've installed StarOffice, but what does it hold within? Here's a brief look at some of its applications



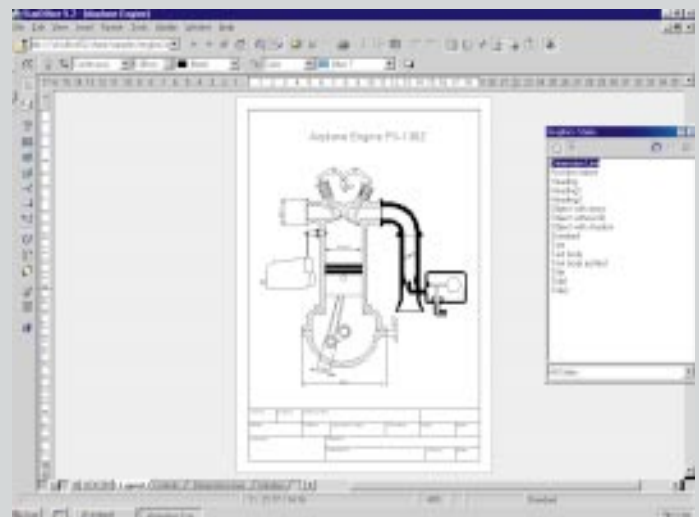
**1** StarOffice Writers Style Sheet implementation gives you flexibility and power. The Stylist tool pulls formatting such as paragraph, text, page, frame and numbering styles together in a one place.



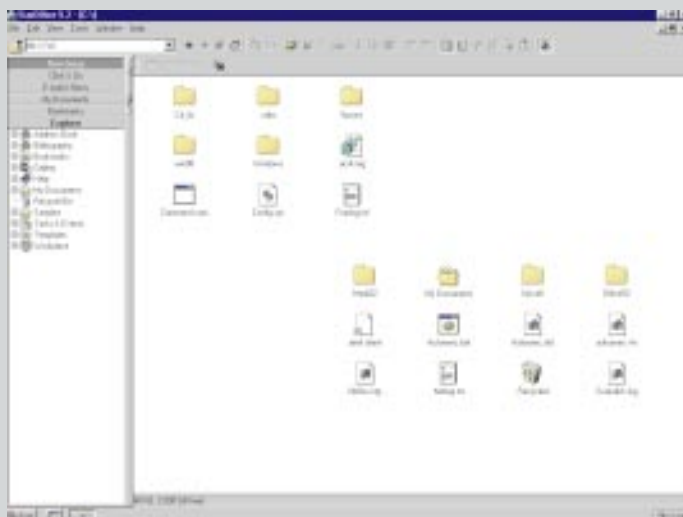
**2** To populate the database, you simply drag and drop data into a table, making it easy to grab information from the Internet and analyse it using the Query and Forms capabilities.



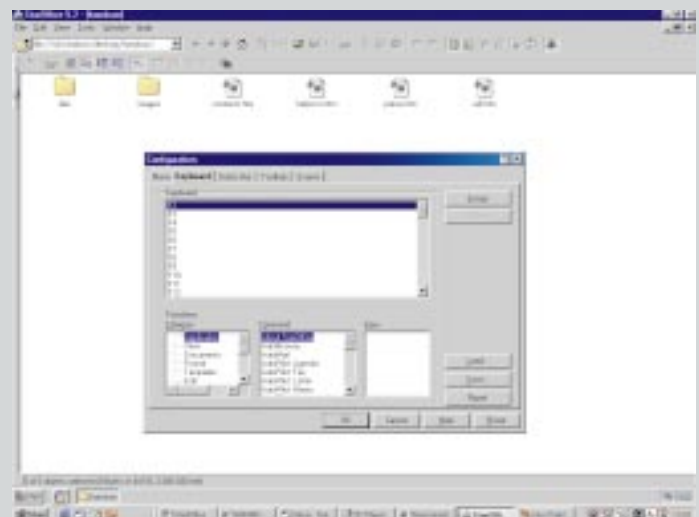
**3** StarOffice's Presentation package enables you to make professional business and leisure presentations easily. Here we've put our holiday snaps on our PC.



**4** The Draw package included with the suite has no end of uses: 3D text effects make it easy to create fancy headlines and presentation titles; vector-to-bitmap conversions of bitmaps offer optimal performance and editability; and Bitmap and gradient transparency enable classy special effects in all types of documents.



**5** The heart of StarOffice 5.2 applications are launched from the StarOffice Start button located on the lower left-hand side of the screen. Other features such as e-mail can be reached from the button bar on the left.



**6** You can re-bind the Hotkeys within StarOffice to perform different features. So, if you want Print to be Ctrl-D instead of Ctrl-P, then it can be. You can even create your own new Hotkeys for features you use regularly.

Full product worth £40

# Medi8or 4.0



Creating amazing multimedia has never been easier with this versatile multimedia authoring program. **Paul Ravening** shows us how



↑ If you don't want to put together complex presentations, you don't have to. If making good with a few lists and text boxes is your style, then go for it.

**H**as HTML ever failed you? Is Visual C++ just not working out the way you wished? Then why not give Medi8or a try. It's the perfect tool for creating multimedia presentations quickly and easily. You could put together a interactive CV, a promo for your company or a simple text adventure with the greatest of ease.

So, how do you start creating? You are presented with the challenge of the blank canvas when you open up the program for the first time but, with the minimum of effort, you can come out with something professional looking.

Medi8or works with a system of pages representing a particular section of your document. You can either link them together using buttons and hyperlinks or surround them with pictures and impress your family with your efforts.

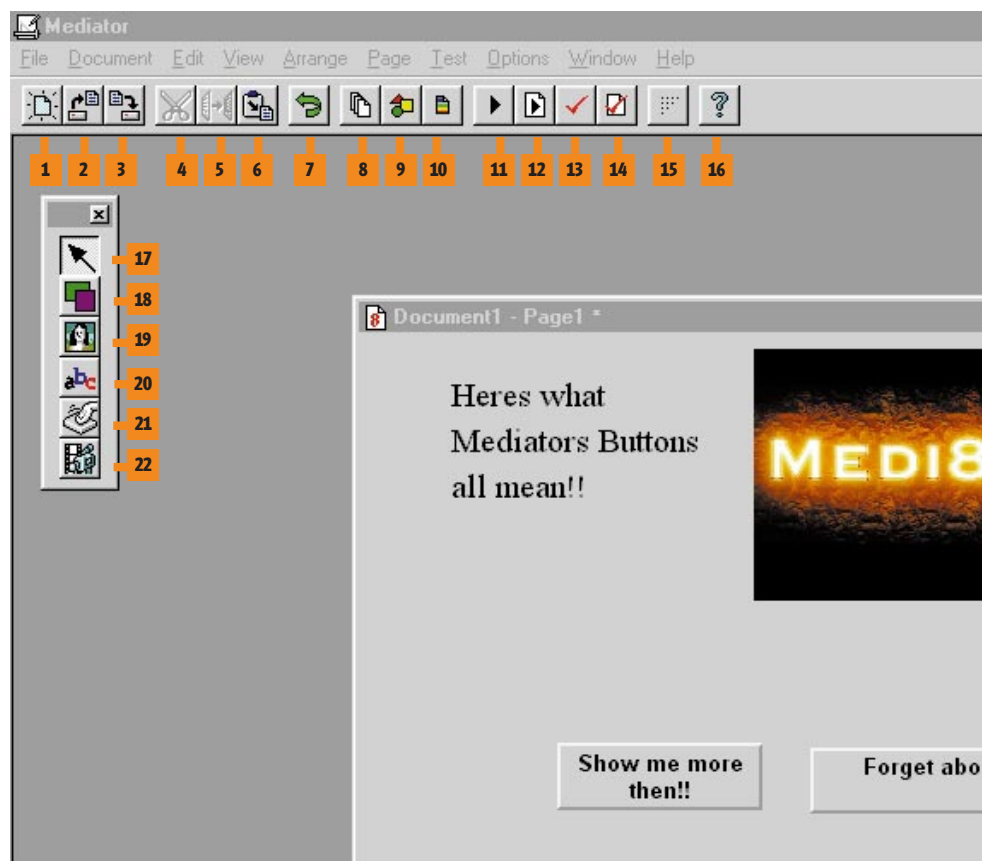
## Advanced features

While it is inherently simple to use, Medi8or comes with a host of advanced features so it can cope with animation, snazzy changeovers between screens and embedded videos. If you've got an artistic flair, then you'll be able to come up with something more radical. And, if you combine Medi8or with another package, such as Paintshop Pro, you should be able to come up with something worthy of a place in the National Gallery!

Once you've grasped the principles of Medi8or, you're ready for near enough anything. To get you started, follow the six step tutorial and keep the annotated screenshot handy. Enjoy! **PCP**

## → The desktop explained

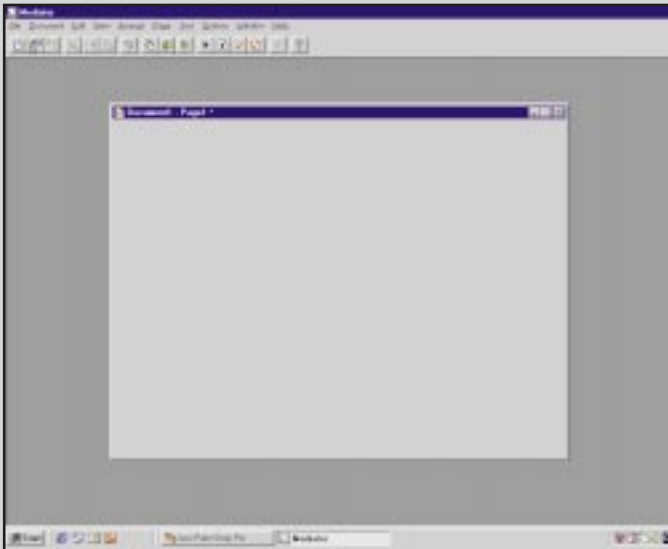
What do all those buttons mean? Keep this annotated guide handy



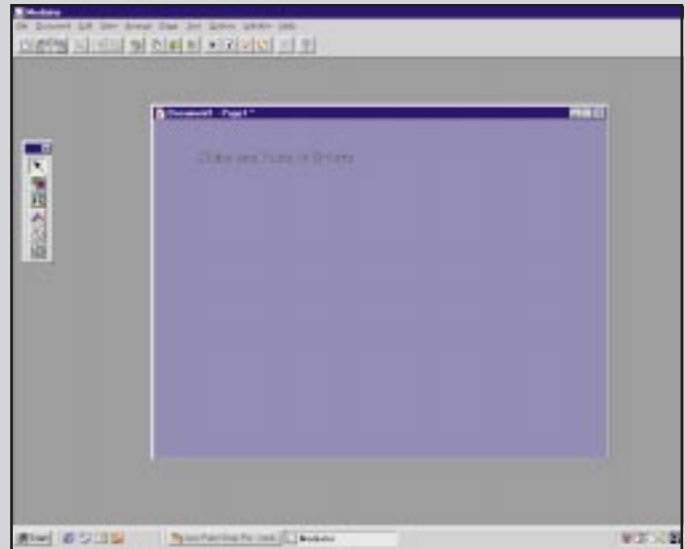
- |                 |                     |                   |                   |
|-----------------|---------------------|-------------------|-------------------|
| 1 New document  | 7 Undo              | 13 Check document | 19 Insert picture |
| 2 Open document | 8 Page list         | 14 Check page     | 20 Text           |
| 3 Save document | 9 Object list       | 15 Grid           | 21 Button         |
| 4 Cut           | 10 Colour           | 16 Contents       | 22 Video          |
| 5 Copy          | 11 Run presentation | 17 Select object  |                   |
| 6 Paste         | 12 Run current page | 18 Draw rectangle |                   |

## Getting started with Medi8or 4.0

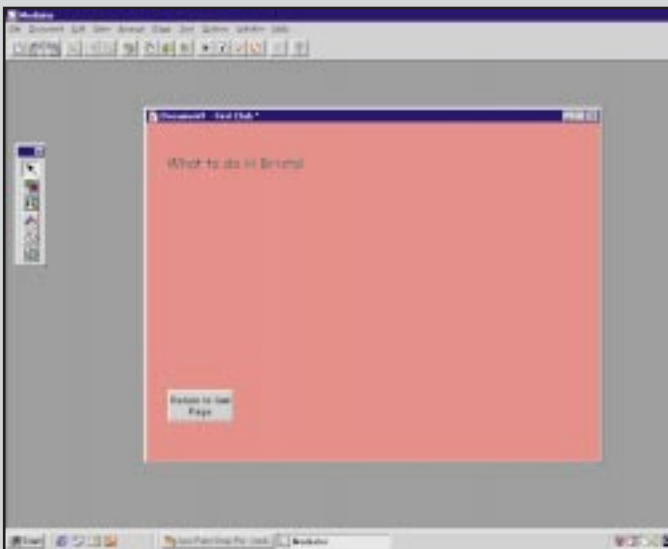
Follow these six steps to Medi8or 4.0 and create a presentation



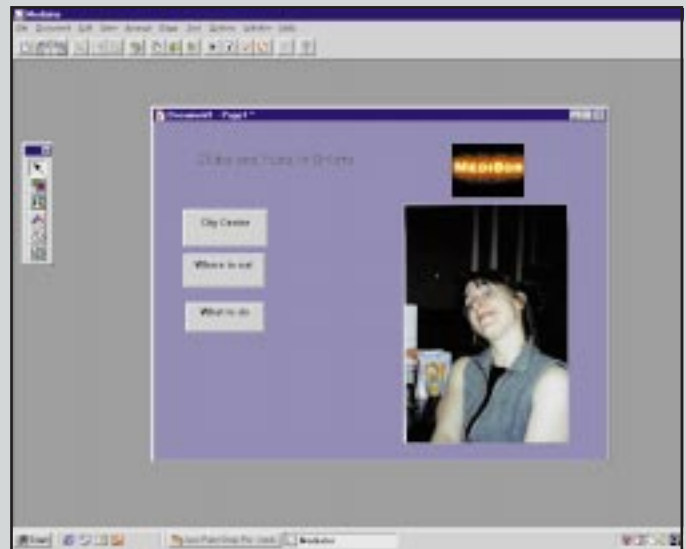
**1** This is the start of your presentation. Right now it's just a blank canvas, but give it some colour by selecting Page then Colour and choose the hue you want. Then you can put your first bit of text on the page. Use the Text tool in the left-hand toolbar.



**2** Each page needs an object to link to another page. You could use an image or some text but we suggest that buttons are your best option. Click on the Button icon and drag a new button on to the page. Name it by either double-clicking the button or right-clicking it and choosing Properties.



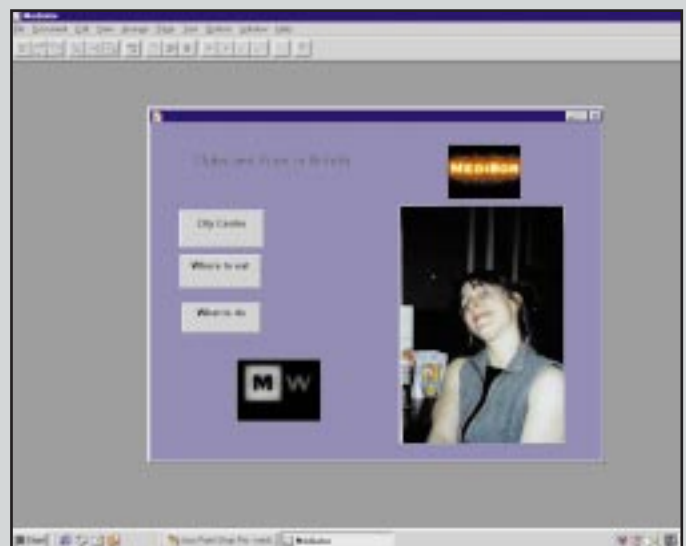
**3** Now you need to create a new page. Go to the Page menu, select New and give it a name. Repeat the procedure in step 2, giving it some colour and text. Now you can take a minute to bask in your two-page creation. Beautiful isn't it?



**4** It's time to add some images. Go back to your first page by pressing F8, then select it in the Pages list. Now hit the Pictures button in the left-hand toolbar and load in an image from your hard drive. These can be resized as you wish.

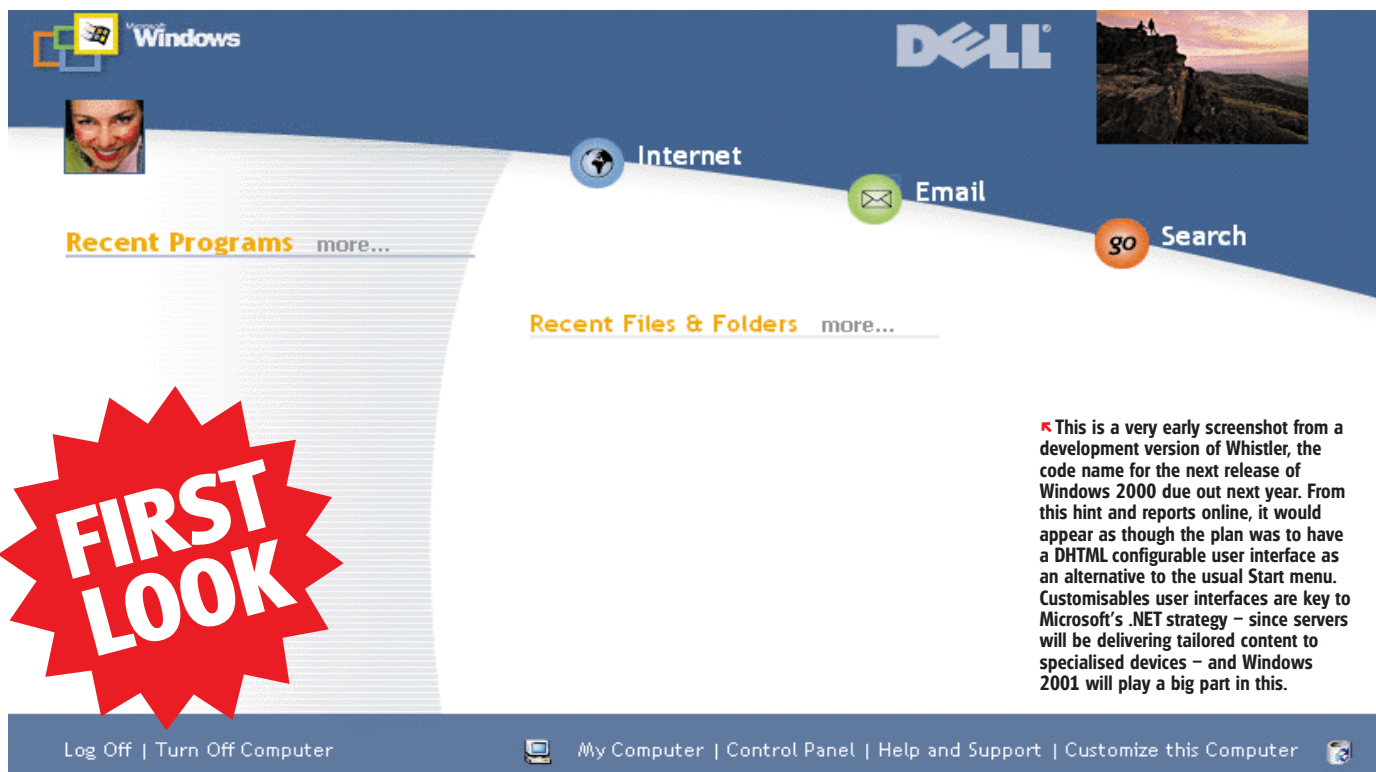


**5** The transition between pages is where Mediator comes in to its own. Right-click either of the buttons on your pages and select Events. Drag the icons along the side and top of the window on to the blank space to create some amazing effects.



**6** Now tinker to your heart's content and finish everything off. Save your multimedia masterpiece as an .exe file to a disk. There you have it: One finished and ready to distribute presentation.

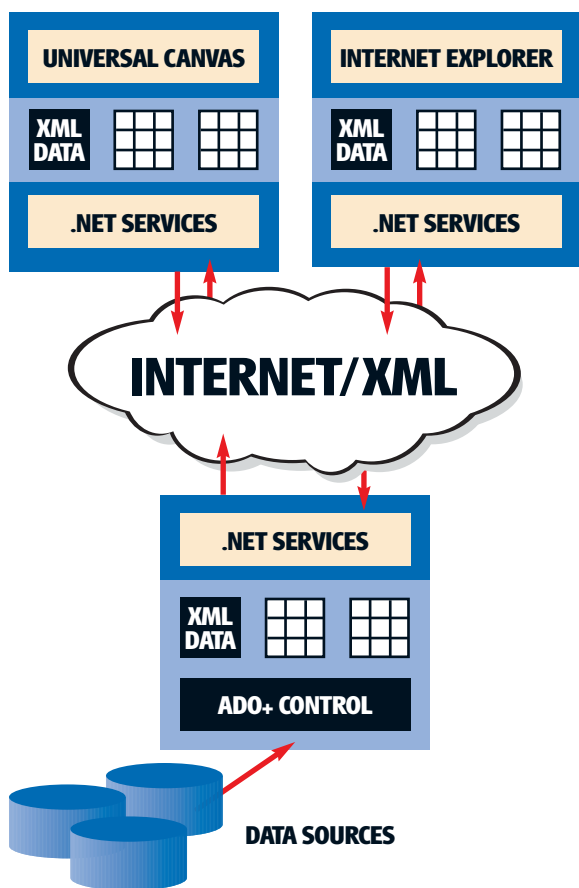




✦ This is a very early screenshot from a development version of Whistler, the code name for the next release of Windows 2000 due out next year. From this hint and reports online, it would appear as though the plan was to have a DHTML configurable user interface as an alternative to the usual Start menu. Customisable user interfaces are key to Microsoft's .NET strategy – since servers will be delivering tailored content to specialised devices – and Windows 2001 will play a big part in this.

## UNDER DEVELOPMENT

# MICROSOFT .NET



↑ A key .NET mechanism is the new Active Data Object design (ADO+) which will enable the integration of XML data, the .NET services layer and the Universal Canvas.

**The design of the Internet happened more or less by accident, but Microsoft wants to remedy this 'fault' with its .NET initiative**

**T**he Internet just happened: no one designed it. A rather odd view to take, you might think. After all, Tim Berners-Lee designed hypertext linked pages, someone else designed the transmission protocol TCP/IP and so on. But no one person or team designed the whole shooting match. What has happened has been more or less accidental, and the winners have been those that found (or elbowed) themselves into the right place at the right time.

With .NET, Microsoft has sat down and rethought how the Internet should work – at least how it should work if Microsoft ran the show.

In the traditional view, the Internet is a secondary medium which provides visual data and e-mail services to client PCs from Web servers. Microsoft .NET swaps this around with the Internet being a sort of information sea in which PCs and other devices (phones, organisers and so on) operate.

### Core technologies

In order to make this vision a reality, Microsoft intends to restructure its existing operating systems and products like Exchange and Office into three levels: the .NET core technology required to make

better use of the Internet, the user interface and product services. According to Bill Gates, "That three-level platform will change how developers think about writing their applications... applications will be deployed and completely up to date simply using that infrastructure."

First, the core. Microsoft .NET will consist of a number of interacting distributed services designed to make information interchange simpler and more transparent. The two really important ones here are the identification service and the data representation mechanism. Clearly, it's critical that a bank, say, should know that it's sending information to you and only you – not someone claiming to be you. But do you really need a separate password for every system? We counted over a dozen on our PC alone.

The data representation is the more revolutionary, however. Extensible Markup Language (XML) is rapidly becoming the standard way of transmitting business data over the Internet. Microsoft .NET will use XML for as many things as it can be practically used for – both in databases and for transfer over the Internet. Together with Simple Object Access Protocol (SOAP) this should enable end-user devices (not necessarily PCs) to interrogate Web data

stores and assemble data in a far more useful format.

## An example

Take, for example, railway timetables (an increasingly common form of popular fiction). You'll be able to locate the data in XML format and then display it on a mobile phone, viewing just the journeys you're interested in. The Web server doesn't need to know that you're using a mobile. (No doubt, Railtrack will come with 'wrong type of XML' as an excuse for delays – some things won't change.)

On the user interface side of things, .NET offers not so much revolution as the evolution of the existing ways of presentation into a more coherent set. If you look at Visual Basic, for example, you can use HTML, DHTML or standard Visual Basic forms to display data.

Microsoft .NET will move to a 'universal canvas' architecture based on XML. User input (currently via mouse and keyboard) will move to a 'Natural Interface' incorporating speech and handwriting as well as the traditional keyboard. The .NET initiative will also encompass a wider group of end-user devices such as mobile phones, televisions and organisers rather than just a traditional PC. See screenshot opposite for a very early hint of how .NET might require greater interface configurability from Windows2000.

Even if the .NET architecture dubiously assumes that we'll all be running on a Microsoft platform, it's when you get to the third part of .NET that we get more than a bit suspicious. Microsoft has the idea that we'll all be renting Office services, for example, from itself. Now, given that most people are perfectly happy with a small fraction of what Office can already do, what possible benefit does this have? Little for the end-user, we suspect, but certainly a tidy continuous revenue stream for Microsoft.

Now to the minor detail of how to implement this lot. And here it gets quite interesting. Microsoft is not only re-engineering Visual Studio but has introduced a whole new language, C# (pronounced C-Sharp), to write everything in. While C# bears more than a passing resemblance to Java, it's quite a bit more powerful. The underlying technology of .NET is implemented in the .NET services which will be usable from Visual Basic, C# and C++. However, Visual Basic programmers needn't panic. Microsoft's Paul Maritz said: "We're trying to make it as evolutionary as we can by building into Visual Studio.NET a lot of compatibility, particularly with the Visual Basic environment."

The fly in the Microsoft ointment is that all of this is fine and dandy – in a Microsoft world. To get the benefit of the .NET architecture, the Internet will have to move towards using .NET universally. It's a tall order even for Microsoft, but even if it could, do we really want Windows everywhere?

**Dermot Hogan**

## TECHNICAL BRIEFING

# DEVELOPING WITH C#

## What Microsoft's new language will offer the .NET developer

**D**uring the past couple of years, Microsoft's entry into the Java market seems to have run into a dead end. This has been a consequence of protracted legal disputes with Java's creators, Sun Microsystems. The real problem lies in the fact that Sun insists on Java being platform-independent whereas Microsoft wanted its Visual J++ 6 to provide a version of Java that was integrated tightly into Windows.

Microsoft's resolution of this problem is now emerging in the form of a 'new' programming language called C#. On the face of it, this language is based on the C family of languages rather than Java, and Microsoft insists that C# has a high degree of fidelity with C and C++.

### C# vs Java

Nevertheless, it obviously has a few things in common with Java, too. Both C# and Java implement a rigorously object-orientated programming (OOP) language with a simplified C-like syntax. Moreover, C# even challenges Java's cross-platform capabilities by providing components and services (COM objects) which can be run over the Internet from other operating systems. For a flavour of the language, take a look at the traditional Hello World program in C#:

```
using System;
class Hello
{
    static void Main() {
        Console.WriteLine("Hello,
        world");
    }
}
```

Here, System is a namespace (a scope block, similar to a module in the Modula-2 language), Console is a class defined within System and WriteLine is a method of that class. Note, too, that the Main function is contained within the Hello class. Unlike C and C++, all functions in C# must be methods of classes. A free-floating main() function is not possible.

### C sick?

Is there really any genuine demand for yet another programming language? Microsoft believes there is. This is due to the fact that all of the most popular PC programming languages at the moment have a number of weaknesses or inelegancies. For example, both C++

and Delphi's Object Pascal are 'impure' OOP languages which enable a mix-and-match style of programming that can lead to obscure accidental bugs. Visual Basic and Java on the other hand, both lack low-level features useful for developing highly efficient code.

### Visual tools

C# promises to have visual development tools to rival VB and Delphi, it will have at least some of the low-level programming features of C++ and it will be as purely object-orientated as Java. In fact, unlike Java, it even treats primitives, such as ints, as objects.

Here C# applies the method, ToString, to the int, 3, without requiring an Integer class 'wrapper' as in Java:

```
Console.WriteLine(3.
ToString());
```

C# is designed for easy Internet application development, including extensive support for XML and Microsoft's .NET platform. And, while its syntax resembles C++, it goes to some lengths to eliminate many of the problems that commonly plague C++ development. Top of the list is its built-in garbage-collection which automatically mops up unused memory. So, just like Java and Visual Basic (but unlike C++ and Delphi), it relieves the programmer of the responsibility of explicitly destroying objects when they are no longer required.

Other safety features of C# include typesafe variables, the automatic initialisation of variables and restricted use of pointers. As in Java, pointers are not available by default. Unlike Java, however, pointers can be used within specially marked code blocks.

This gives programmers the best of both worlds. By eliminating pointers in general, C# avoids common pointer-related bugs. But, by providing the 'get-out clause' of pointer-enabled code blocks, it also gives programmers the freedom to do pointer arithmetic and access the Windows API directly.

By picking out the best features from other major languages, Microsoft clearly hopes that its new language will be able to win over a substantial number of existing developers. In short, C# could very well become the first big new programming language of the century.

**Huw Collingbourne**